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Trends

Crude-Oil Production
By States—Page 139

CRUDE-OIL STOCKS 221,674,000 bbl. as of February 3—up 364,000 bbl. One year ago 237,745,000 bbl.

GASOLINE STOCKS 91,034,000 bbl. as of February 3—up 1,811,000 bbl. One year ago 81,604,000 bbl.

RESIDUAL FUEL-OIL STOCKS 50,451,000 bbl. as of February 3—down 668,000 bbl. One year ago 52,956,000 bbl.

GAS OIL AND DISTILLATE STOCKS 32,370,000 bbl. as of February 3—down 1,281,000 bbl. One year ago 36,333,000 bbl.

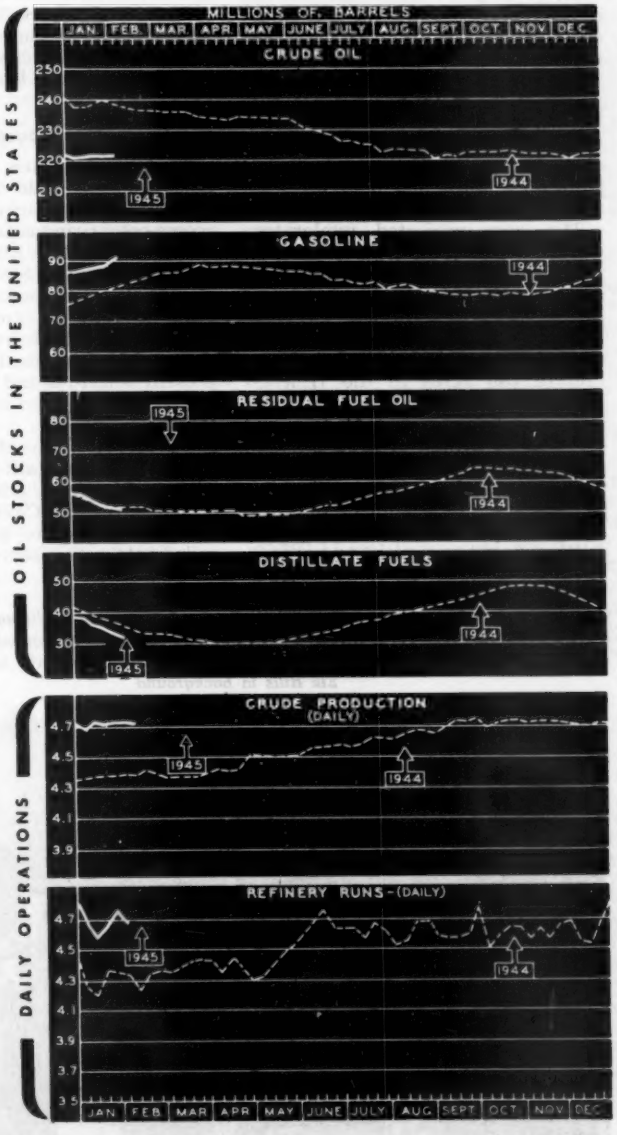
CRUDE OIL PRODUCTION 4,720,750 bbl. as of February 10—down 12,550 bbl. One year ago 4,412,960 bbl.

REFINERY RUNS 4,662,000 bbl. daily week ended February 3—down 94,000 bbl. One year ago 4,358,000 bbl.

WIDE interest in the petroleum industry generally is apparent in every development relating to the production and consumption of natural gas, reflecting the feeling that this closely allied product of petroleum operations will greatly increase in commercial importance with a return to normal conditions. Extensions and additions to capacity in existing systems are still being authorized as war measures. There are reports that the rapid construction of one or more new systems may be approved, designed primarily to provide fuel for war-production operations. These projects are based on the war experience that natural gas is the most desirable fuel wherever it can be made available from the standpoints of manpower, materials and transportation. It is explained that additional capacity at certain war-production centers of the Middle West is the logical solution for an existing fuel and transportation shortage. Within the natural-gas industry there is support for these extensions coming from owners of proven properties located principally in Kansas, Oklahoma and Texas. These producers fear that there is no hope for returns on these properties for many years unless existing facilities for transportation are expanded at this time.

OPPOSITION to increases in natural-gas production and sales comes from several sources. The coal industry is contending that it can furnish the additional fuel supplies required over the remainder of the emergency. It is supported in that position by the railroads and other enterprises which are primarily interested in assuring themselves the maximum postwar demands for their products and their transportation facilities. This opposition is well organized.

THE opposition of several of the natural-gas producing states to additional exportation of their gas is generally known. It is understood, however, that conservation officials of certain states will not oppose additional war-emergency outlets, feeling they will serve the war effort and also will provide needed markets after the war is over. At the same time there are oil companies with important natural-gas reserves which are not interested in disposing of more gas, explaining that the value of the gas in the economic production of crude-oil and its potential value in the manufacture of petroleum liquids are greatly in excess of the going markets in the largest areas.



Navy to Seek Funds to Extend Exploration at Elk Hills

by L. P. Stockman

LOS ANGELES. — The Navy Department will soon request an appropriation and authority to proceed with an exploratory program in the Elk Hills Naval Reserve. The reason for this additional exploratory work is to provide Navy Department with sufficient additional information regarding the total oil reserves contained in the Elk Hills field. Naval Reserve No. 1 at Elk Hills contains approximately 43,000 acres but production to date has been developed only in the east end of the reserve. The withdrawal order of President Taft has prevented development work except that with approval of Navy Department. The policy of the Navy has been to hold back Elk Hills production in order to husband supplies of fuel for emergencies. Elk Hills production is being developed and used for military purposes.

The new projected exploratory work, involving between 37 and 40 new wells which will be shut in upon completion, will be undertaken in the Hillcrest section of the field. Present plans call for the drilling of two wells on each undeveloped section of 640 acres in the Hillcrest area along the axis of the structure. One well will be a deep test and one will be drilled to production in the shallow zone. This program would be changed or modified depending upon development findings. In certain down structure sections, drilling would be limited to one well and drilling on certain other sections would be held up for the time being. The Navy Department would like to know how much oil can be produced in the future by Elk Hills and at what rate the production could be secured.

Preliminary to seeking an additional appropriation for the development program, members of a subcommittee of the House Committee on Naval Affairs were conducted on a field tour last week. Several trade journal writers and newspaper men were also guests of the Navy on the inspection trip. Capt. W. G. Greenman, U.S.N., director of naval petroleum reserves, headed the Navy personnel.

Committee Housed in Field

The subcommittee members were housed in the field living facilities and conducted hearings in assembly rooms comprising a part of the naval establishment at Elk Hills. Capt. Harry P. Stolz, U.S.N.R., commanding officer and member of the operating committee and engineering committee and his naval assistants thoroughly explained the scope of present activities and conducted the congressional group to all points in the field.

Another member of the Naval establishment in California is Capt. V. H. Wilhelm, U.S.N.R., who was a member of the California division of The Texas Co. prior to being called into active service at the outbreak of war. Both Stolz and Wilhelm have been in the naval reserve for a number of years and were called into active service to take charge of activities at Elk Hills. Captain Wilhelm, chairman of the engineering committee, told the congressional committee that Elk Hills at present is estimated to contain a reserve of 283,000,000 bbl. of crude oil, of which 45,000,000 are located in the so-called old section of the field. This estimate is conservative and if the Hillcrest section is found productive this reserve might exceed 500,000,000 bbl. especially if the Stevens sand in the Miocene is found productive in both areas. To date seven Stevens sand wells have been finished in the present field but this is not enough wells to permit making a complete estimate of Miocene reserves.

Actual drilling at Elk Hills is being done by a number of independent drilling contractors under supervision of various Standard Oil Co. of California men and production activities are being conducted likewise by members of the company's organization. This work is being done at actual cost and is under direct control of the naval establishment at Elk Hills.

Current daily production of Elk Hills is slightly over 53,000 bbl., definitely indicating the objective of 65,000 bbl. per day will be reached long before the deadline of June 30, 1945, as set by the Navy Department and approved by Congress. Field men believe the objective will be reached in April. Preliminary estimates indicated that 250 to 300 new wells would be required to reach the production goal. The 65,000 bbl. per day objective will be attained with fewer wells.

The subcommittee making the Elk Hills inspection was transported to the West Coast in Navy planes and after visiting Standard of California's new refinery at Richmond flew directly back to Washington. Those making the trip included Representatives E. V. Izac, Lansdale G. Sasscer, L. Mendel Rivers, F. E. Hebert, Ray J. Madden, Frank R. Havenner, Hugh DeLacy, Andrew J. Biemiller, James W. Mott, W. Sterling Cole, George J. Bates, William E. Hess, John Z. Anderson, Robert A. Grant, Harry L. Towe. The resident commissioner of Puerto Rico, Jesus T. Pinero was also present. Captain Greenman, U.S.N., director of naval reserves represented the Office of Secretary of the Navy and Capt. Donald J. Ramsey, U.S.N. represented the Office of the Judge Advocate General. Standard officials present included R. J. Stoner, F. C. Bryant and J. L. Hanna, vice presidents; S. V. Natcher, public relations and H. O. Thompson Standard of California's representative at Washington.

Congressional subcommittee on naval affairs inspects gasoline-refining plants, part of Navy's petroleum reserve, Elk Hills, California. The subcommittee toured the entire area, studied problems confronting naval and civilian petroleum experts in oil production. Elk Hills in background

Atlantic Launches Program to Become Venezuela Producer

by N. O. Fanning

NEW YORK.—Atlantic Refining Co. is reported to have let contract for its first test well in Venezuela to be drilled under the Atlantic-Pantepec Oil Co. contract. This test will be on the Pirital tract a short distance west of the greater Jusepin area. Prospects for production appear to have been brightened by favorable results thus far achieved in extending output of the field westward by Mene Grande Oil Co. on its Travieso concession.

In addition to this prospect of further extending the greater Jusepin field, deep drilling is said to have been attended by favorable results not only in the original Jusepin area but also at Santa Barbara, with the result that this oil district is becoming one of the most active in Venezuela.

Drilling operations have also been stimulated by the increase in pipeline capacity to seaboard, both completed and in prospect. The Creole-Mene Grande line has been placed in operation, adding 90,000 bbl. to the daily market outlet for the greater Jusepin district and boosting shipping capacity to about 170,000 bbl. daily. Venezuelan Petroleum Co. plans to complete its program to raise the daily capacity of its Santa Barbara to Puerto de la Cruz line from 30,000 to 75,000 bbl. by the end of this month, bringing the pipe-line capacity out of greater Jusepin to 215,000 bbl. daily.

Both the Creole-Mene Grande and Venezuelan Petroleum Co. lines hook into the Puerto de la Cruz terminal of the Oficina system bringing the total throughput of the terminal, when all present expansion projects are completed, to a total of 285,000 bbl. daily. The Oficina pipe line, serving the El Roble, San Joaquin, Santa Rosa, Oficina and other fields in Anzoategui, has a capacity of 120,000 bbl. per day.

With the present activities in the greater Jusepin field confined to Creole, Pantepec, Venezuelan Petroleum (Sinclair) and Mene Grande (Gulf), entry of new operators awaits the commencement of operations by Atlantic, together with the releasing of new concessions adjacent to the Santa Barbara-Mulata holdings by the Venezuelan government. Bids are reported to have been received on a substantial acreage, but the government has not yet announced the acceptance of any offers.

Crude-oil production in the greater Jusepin field reached its peak thus far in October 1944 when it averaged about 94,000 bbl. daily. Of the total, Jusepin proper contributed 37,600 bbl. daily, Mulata 25,100 bbl., Santa Barbara 20,400 bbl., Muri 9,000 bbl. and Travieso 1,900 bbl. The increase in capacity of the Venezeulan Petroleum Co. line from 30,000 to 75,000 bbl. will make possible increased shipments from the Santa Barbara and Muri portions of the field. Sufficient potential productive capacity has been developed to fully engage the increased pipeline outlet. The October output, it should be kept in mind, was prior to the completion of the Creole line, which in itself, therefore, has made possible virtually doubling shipments from the field.

Carbon-Black Export Trade Tactics Attacked by Federal Trade Commission

WASHINGTON.—Charges that Carbon Black Export, Inc., has restrained both domestic and foreign competition in violation of the Webb-Pomerene act under which it was formed were aired in a series of hearings before the Federal Trade Commission last week.

Witnesses during the week were all officials of Carbexport, an organization including most of the U. S. producers of carbon black, who described the operation of the export association and defended its practices as necessary to stabilize the foreign market. Specific charges against Carbexport were not revealed except through questioning of witnesses by FTC attorneys, but other evidence will be put into the record at later hearings.

The FTC, which has supervision over all export associations formed under the Webb-Pomerene law, charges in general that Carbexport exceeded the provisions of its charter and of the law by making agreements with producers and distributors of carbon black, both members and nonmembers of the association, limiting production and fixing prices and terms of sale. These contracts are alleged to have had the effect of limiting competition in domestic commerce, with which Carbexport is supposed to have no connection, as well as in foreign trade.

In the export business, the FTC has asserted that Carbexport made contracts with both member and nonmember producers preventing them from making any foreign sales, directly or indirectly, except through the association, and contracts with domestic and foreign sales companies preventing them from handling any carbon black not routed to them by Carbexport. It is also charged that these contracts fixed prices and terms of sale for agents and distributors of Carbexport abroad.

Chief witnesses were C. E. Kayser, president of Carbon Black Export, Inc.; Godfrey L. Cabot, Godfrey L. Cabot, Inc.; Reid L. Carr of Columbian Carbon Co., secretary of Carbexport; Hans W. Huber, president of J. M. Huber Corp., and L. C. Herkness, president of Charles Eneu Johnson Co.

They denied all allegations of illegal actions, and while admitting "disciplining" certain distributors for violating the terms of sales agreements they contended that the carbon-black export trade was so chaotic prior to the formation of Carbexport that firm measures are necessary in order to keep the market stabilized.

As to the future, they declared that united action by all U. S. exporters is necessary to maintain the place of this country in world markets since there is a strong probability that after the war production will be greatly increased in many foreign countries, particularly Russia, Venezuela, Argentina, Japan and Arabia.

More Heavy-Tire Plant Additions Are Approved

WASHINGTON.—The Rubber Bureau of the War Production Board last week released preliminary information on two more new heavy truck-tire production facilities for which the Defense Plant Corp. has authorized funds. These new facilities at Oakland, Calif., and Bowdon, Ga., bring the total new heavy-duty tire projects thus far announced to 15.

Both projects are part of the program to add a total of 6,000,000 heavy-duty tires to existing U. S. production capacity.

Price Questionnaire Soon To Be Mailed Representative Producers

by Henry D. Ralph

WASHINGTON. — Questionnaire forms for a study of crude-oil-production costs will be ready for mailing by the Office of Price Administration within a few days.

A number of changes in the original form were suggested by the accounting subcommittee of the industry advisory committee at St. Louis in order to make the questions conform more nearly to oil industry bookkeeping practices. The mechanical arrangement of the form to accommodate these suggestions is now being completed by OPA, and as soon as a press proof is available the revisions will be submitted to the advisory committee for final approval. Approval of the form by the Bureau of the Budget is expected since the bureau has had a representative at the discussions, after which the form will be printed and mailed.

A list of approximately 600 representative producers has been drawn by OPA and submitted to the committee for approval. This includes all integrated oil companies, large producing companies, and independents carefully selected on the basis of size and geographic location in order to provide a fair cross-section of the producing industry.

While OPA and the industry appear to be in complete agreement as to the method of taking this cost survey, they are far apart on the use to which the figures should be put when they are compiled.

OPA's Position

OPA insists that under its powers it can grant increases in ceiling prices only on a showing of hardship based on current operating and inventory costs. The advisory committee, while admitting that the earning position of the entire oil industry taken as a whole might not support an appeal on the basis of hardship as defined by OPA rules, takes the position that current costs and earnings of crude producers alone, if properly computed, would support action to increase crude prices under other provisions of the law.

The chief bone of contention is the matter of replacement costs for crude. Exploration and development costs, both actually and in proportion to the amount of oil discovered, are admittedly higher now than at the time of discovery of most of the oil now being produced. The industry believes this fact is ample justification for higher crude prices, but OPA declares its present law does not recognize such factors as the basis for price increases, and also points out that reserves now being discovered may be extended in later years and such extensions should be charged back to the year of discovery.

The advisory committee is currently basing its argument on the so-called "last-in-first-out" method of inventory accounting, which is recognized by the Bureau of Internal Revenue for certain cost purposes. Under this method of accounting, the current inventory is priced on the basis of the cost of the most recent additions, and if this were applied to crude prices it would mean that all oil would be valued at the present cost of discovery.

The cost questionnaire will seek to obtain data on both historical costs and present discovery costs, although OPA officials have warned that they cannot give any consideration to the latter.

If and when a satisfactory figure is determined for current discovery costs the oil industry is expected to use it in an attempt to upset the OPA attitude, either in an appeal to the Office of Economic Stabilization or in an effort to have Congress amend the law. Congressional committees will soon start work on legislation to extend the life of OPA beyond its present expiration date of June 30, 1945, and the oil industry undoubtedly will again attempt to have the law amended so as to permit an increase in crude prices.

Meanwhile the national refiners advisory committee recently appointed by OPA has requested that its first meeting be postponed from the date of February 20 originally set by OPA. The group will meet in Washington March 15, the day following the next meeting of the Petroleum Industry War Council.

Tank-Truck Operators Asked to Help in Emergency

WASHINGTON.—Petroleum tank-truck operators were enlisted here this week to put the nation's 16,000 over-the-road tank trucks on a minimum of 130 hours a week to ameliorate the threatened transportation shortage. Operators who are using their equipment fewer than the recommended number of hours per week were urged to lease such vehicles to any petroleum carrier or shipper who can utilize it during the idle periods.

Cooperation with the request to fully use tank-truck equipment is imperative, the Office of Defense Transportation said, because of the serious reduction in petroleum stocks brought about by the current transportation crisis and military requirements.

Reports indicate that many bulk plants and dealers in fuel oil and other petroleum products are in such short supply that only full use of tank-truck equipment will enable consumers to obtain even immediately necessary supplies. It may be months, the ODT said, before the current setback in distribution can be made up.

ODT pointed out that it does not wish to indirectly penalize those operators willing to lease available equipment and is taking appropriate steps to aid such operators in meeting their man-power, tire, replacement parts and equipment needs.

Training Symposium Completed by D.E.M.A.

If a student in an engineering school intends to enter the diesel-engine industry, just what sort of training should he have? And if he does enter the industry, what are his opportunities there?

A folder just issued by Diesel Engine Manufacturers Association answers these and other questions. It contains the boiled-down conclusions reached by the association after its educational committee had conferred with 116 deans and professors of the country's top engineering schools. The nine conferences, beginning in October, were held in New York, Philadelphia, Raleigh, Buffalo, Milwaukee, Chicago, Denver, Salt Lake City and San Francisco.

Titled "What Are the Opportunities for College Men in the Diesel Engine Industry?" the folder points to jobs in diesel-engine factories in production, installation, maintenance and sales. Out in the field there is "interesting work" in diesel operation in "railroads, ships, stationary power plants, buses and trucks".

Jobs for designers and in the research field will, for the most part, be open to engineers with master's and doctor's degrees, the folder states.

Best training to equip a graduate engineer for entering the diesel industry consists of "a well-grounded course in fundamentals of mechanical engineering," D.E.M.A. found.

THIS WEEK

TRANSPORTATION— Pile up of tank cars consigned to and backhauling from East Coast continues at icebound eastern rail centers. . . . ¶Inland waterway traffic drastically curtailed. . . . ¶Only big-inch and little-big-inch lines maintain normal traffic, unfettered by severe winter. . . . ¶Moderating temperatures along the East Coast arouse hopes that severest winter in recent years is breaking. . . . ¶Damages to equipment and maintenance burdens exceedingly distressing under recent operating conditions. . . . ¶Tank-truck operators urged to place all vehicles on 130-hour week, leasing spare facilities. . . . ¶Foreign Economic Administration reveals construction of 2,000-mile military line into China. . . . Size, construction progress, capacity and other details undisclosed. . . . American manufacturers and the Army supplied the pipe, design, technical direction—China the manpower. . . .

SUPPLIES— Eastern supply and essential requirements "touch and go," especially in distillate-fuel oil. . . . Outlook not particularly bright for motor fuel. . . . Stocks of gasoline in maladjustment owing to transportation. . . . ¶Draft on domestic crude-oil inventories running about 2,000 bbl. daily; requirements in reasonably close balance with production. . . . ¶Scheduled emphasis on jet-propelled military planes may subordinate or modify constant calls for more 100-octane gasoline, require more kerosene, distillate fuels. . . .

MATERIALS—Prospects improved for meeting second quarter petroleum-industry program. . . . Early collapse of Germany would make it positive, remove all doubt. . . . Claimant agencies (including PAW) will be assigned steel quotas next week. . . . Until then, outlook may be changed as many times as there are intervening days. . . . At best, tubular inventories will have to come down if well-completion schedule is met. . . .

INTERNATIONAL—Existing, nearly completed and virtually assured proposed lines terminating at Puerto de la Cruz, Venezuela, will elevate it to one of world's largest oil ports. . . . Pipe-line capacity feeding through the terminal will aggregate 285,000 bbl. daily, exceeded only by Abadan and Aruba, in foreign countries. . . . ¶Recently concluded big-three conference probably explains delay in resuming formal consideration of Anglo-American oil treaty. . . .

EXPLORATION—Naval technicians granted patents on new method of electrical prospecting for oil. . . . Spurt of wildcat completions last month has tapered off, now averaging 70 weekly. . . . Revival expected when weather conditions improve in northern states. . . . ¶Mississippi program promises more spectacular results. . . . Already state has one 1945 discovery, another wildcat showing. . . . ¶Navy seeking funds for about 40 exploratory wells in western portion of Elk Hills. . . .

PRODUCTION—Oklahoma City well which lessee didn't want to drill has produced 2,400,000 bbl., still making 500 bbl. daily. . . . One production holiday called at West Edmond to make pressure, gas-oil ratio surveys. . . .

This might be just another drilling rig except for its location in the submerged-land area on the southeastern shore of Florida and for the fact that drilling is projected to 12,000 ft. The rig is owned by Al Buchanan, San Antonio contractor, and is engaged on location for M. L. Benedum, O. D. Robinson and Republic Oil Co. 1 W. G. Blanchard concession, 30 miles due south of Miami in Barnes Sound, 29-59s-40e, Monroe County. Drillsite is at the end of a causeway running from Key Largo 800 ft. into the sound. It will test the theory that an anticlinal ridge forms the backbone of Florida, extending 200 miles southeast from Miami to the Dry Tortugas

Pipe Lines Only East Coast Oil Arteries Escaping Winter's Rigors

WASHINGTON.—Petroleum tank-car deliveries to the East Coast last week fell to the lowest point in the last three years as severe weather conditions east of the Mississippi and north of the Ohio River continued to cripple overland and inland waterway oil movements.

During the week ended February 3, tank cars delivered a daily average of 439,722 bbl. of petroleum and petroleum products, as compared with 464,561 bbl. daily during the week ending March 21, 1942, the previous low point.

Pipe-line movements continued unhampered by weather conditions. The big-inch (24 in.) pipe line pumped an average of 311,060 bbl. daily for the week ended February 2, as compared with an average of 316,582 bbl. daily for the previous week.

The little big-inch (20 in.) pipe line pumped an average of 228,111 bbl. daily for the week ended February 2, as compared with 228,314 bbl. daily for the previous week.

Meanwhile, East Coast fuel oil consumers have had to rely more than usual on stocks already stored in eastern bulk tanks. East Coast home-heating (distillate) fuel-oil stocks during the week ended January 20 dropped 846,000 bbl. to a net of 7,374,000 bbl.

The Petroleum Administration for War estimated that between 15,000 and 20,000 petroleum tank cars were stranded by snowdrifts or tied up in yards and terminals last week.

Barge Traffic Almost Paralyzed

Barge traffic is almost completely paralyzed along the Atlantic Coast and on the upper Ohio River.

"The East Coast," commented Ralph K. Davies, deputy petroleum administrator, "is in one of the most critical periods since the war began. Local spot shortages are developing at several points north of the Potomac River because it has been impossible to move sufficient supplies from the principal storage points to consuming areas as rapidly as is necessary to meet all demands.

"Spot shortages will continue because of the effects of the current transportation handicaps all along the East Coast—from Bangor, Me., to below the Chesapeake because of ice conditions in the harbors, bays, and rivers; and south of the Chesapeake because of seasonal fogs which delay barge movement. Inland, there is heavy ice on the rivers; ice is now forming in the headwaters of the Ohio River.

"During the last week there has been difficulty in delivering home-heating fuel oil and kerosene to New York harbor, Boston, Baltimore, and all New England cities reached by barge.

"That we have not had more difficulties than have been experienced has been due to the almost superhuman accomplishments of the transportation and supply personnel of the government and industry."

Davies said that even when tank cars begin to "break through" to East Coast points, the effects of the paralysis that hit the railroads will be felt for several weeks thereafter. He explained that stranded tank cars include not only those loaded with oil for eastward movement but empties that were heading back to Texas and the Midwest for reloading and should have been ready now for the return trip to the East.

Trains Completely Halted

Severest blow to the movement of petroleum tank cars was felt in western New York, northern Ohio, and western Pennsylvania, Davies said. Through oil trains were hampered by heavy snows and ice interfering with interlocking switching operations, while some trains were halted completely by 40-ft. snow drifts that blocked rights-of-way through railroad "cuts".

Along the Niagara frontier, 80 to 100 in. of snow backlogged some 4,200 oil tank cars from Buffalo as far west as Toledo and Detroit. About 1,000 oil tank cars were laid up on feeder lines from Toledo westward, waiting for the breakup of congested traffic east of Toledo and Pittsburgh. Cleveland was snowbound for several days so that through trains could not move into the yards in the city.

Pittsburgh, along with Buffalo a principal gateway to the East Coast, was particularly hard hit by snow storms.

Barges, which are important links between bulk terminals and many large cities, were particularly hard hit by ice and snow. The Coast Guard now has ice cutters on the Ohio River, Hudson River, Potomac River, Chesapeake Bay, New York harbor, and at other points in an effort to keep channels open for the movement of oil barges to Steubenville, Ohio; Wheeling, W. Va.; Pittsburgh, Pa.; Washington, Baltimore, Philadelphia, Yonkers, N. Y., and other areas.

Ice on the lower Hudson River is impeding oil barge movements as far as Yonkers, but enough tows were getting through last week to keep the area from running out of supplies. Beyond Yonkers, no barges can make deliveries until Coast Guard ice breakers move in and, in addition, extra tug boats are made available to break ice.

Meantime, some 25 tow boats are in New York repair yards while others are waiting to get in.

O'Mahoney Selected to Head Senate Oil Group

WASHINGTON. — Sen. Joseph C. O'Mahoney of Wyoming has been selected as chairman of the special Senate committee to investigate petroleum resources, succeeding the late Sen. Francis Maloney of Connecticut.

SEN. O'MAHONEY

Senator O'Mahoney was a member of the original committee, and Senator Maloney's place as a representative of the committee on commerce has been filled with the appointment of Senator John H. Overton of Louisiana. Otherwise the membership of the special committee remains the same.

Plans for the committee's activities have not yet been announced other than that it will sit with the foreign relations committee during consideration of the Anglo-American petroleum treaty which is now in process of revision in the State Department.

Senator O'Mahoney has always been active in petroleum matters at the Capitol, and was chairman of the Temporary National Economic Committee which made extensive investigations of the oil and other industries shortly before the war.

Canol Project "Flop From Start," Moore Declares

WASHINGTON. — Characterizing the Government's Canol oil and pipe-line project in Alaska as a "flop from the start," Sen. E. H. Moore, Oklahoma, has called on the War Department for detailed information on its cost and operation. He wants a month-to-month statement of crude-oil runs from the Norman Wells field to the Whitehorse refinery for 1944, quantity and grades of gasoline produced by months, and refinery production. The War Department said the information was being prepared.

Patents Issued on New Electrical Method for Oil Prospecting

WASHINGTON.—The Official Gazette of the United States Patent Office last week listed a new method of electrical prospecting for petroleum among 530 inventions for which patents have been issued.

Patents 2,368,217 and 2,368,218 were issued to Dr. Harvey C. Hayes of the U. S. Naval Research Laboratory in Washington on a system of electrical prospecting for formations favorable for the accumulation of petroleum deposits.

The invention is based upon the electromagnetic theory which predicts, first, that a vertically directed earth current will give rise to closed equipotential lines on the earth's surface and that, conversely, the presence of closed equipotential lines predicates the presence of a vertically directed current; and second, that the line of maximum and minimum potential will define the axis of a current stream.

Geophysical research over a period of 5 years in Texas and elsewhere indicated that in oil-bearing formations where the vertical current stream took the form of sheets arising along its boundary the axis of these sheets would define the boundaries of the formation.

By laying an insulated cable and providing terminals in the cable at spaced intervals, Dr. Hayes discovered that certain electric potentials could be measured precisely. From a series of readings made of the potential drops between an earthen electrode at one end of the cable and other earthen electrodes driven into the ground at the stations, a potential-profile curve may be plotted which reveals the presence or absence of the critical characteristics of an oil-bearing formation.

The patents may be used by, or for, the United States Government without payment of royalties.

Voluntary Exchange of Technical Information Favored by Dearborn

NEW YORK.—Voluntary exchange of technical information, generally practiced as a part of the war effort, should be continued after the war to promote technological progress and jobs, according to R. J. Dearborn, president of the Texaco Development Corp., who today accepted chairmanship of the N.A.M. committee on patents for 1945.

"Many wartime practices are unsuited to peacetime application, but the exchange of technical data and information, desirable in time af war, is also desirable in time of peace, and industry should be encouraged to proceed with such arrangements," said Dearborn, who was a technical consultant for the Rubber Reserve Co. under which the government's synthetic-rubber program was developed.

"Patents properly granted to cover technological improvements provide the necessary safeguards to enable exchange of technical data and information between inventors in the same art," he continued. "The tremendous value of such exchanges has been demonstrated during recent months in the extremely rapid development and perfection of processes for the production of synthetic rubber by an exchange of information among all those who have done any creative work in the field.

"In order to encourage all proper exchanges and agreements which tend to promote trade and competition instead of to create monopoly, I favor a clarification of the anti-trust laws to remove the present uncertainty as to the legality of such cooperation and I favor a statutory provision for the recording with the government of agreements pertaining to patents and inventions.

"The recent U.S. Supreme Court decision in the glass industry case is an important step toward clarification of what companies may or may not do with their patents. It has admirably demonstrated that patent owners have no more right than others to form combinations to suppress competition or restrain trade. On the other hand, the opinion has dealt what I hope is a death blow to the idea that our patent system provides for the compulsory sharing of inventions."

Dearborn stated that as chairman of the N.A.M. committee on patents he will advocate a program of constructive patent legislation, developed by the association after obtaining the recommendations for improvements in the American patent system from hundreds of manufacturers, inventors, patent lawyers and representatives of government.

"My own view is that the best patent system is the one which best serves the public interest, and I am convinced that that view is shared by the vast majority of American manufacturers," said Dearborn.

Green Becomes Oklahoma Conservation Attorney

OKLAHOMA CITY. — Floyd Green, formerly general counsel of the Oklahoma Corporation Commission has been appointed conservation attorney for the oil and gas department, succeeding Earl Foster who is now secretary of the Interstate Oil Compact Commission.

Green has been on the legal staff of the Oklahoma Corporation Commission since 1939 when he became assistant conservation attorney. In July 1941 he became general counsel of the commission.

He was born at Sallisaw, Okla., attended the University of Oklahoma and Tulsa University law school. He served as Sequoyah County (Oklahoma) attorney from 1935 to 1936 and then engaged in private practice until joining the Corporation Commission's legal department.

Shell to Start Exploitation Of Colombian Oil Fields

BOGOTA. — Large-scale exploitation of Colombian oil fields will be started in April by Compania de Petroleos Shell, it is reported. Shell has 42 wells ready to start production in the Casabe area, across the Magdalena River from the Tropical Oil Co.'s Barranca Bermeja Concession, oldest in Colombia. Initial production of the new field, estimated at 1,400 bbl. a day, will be shipped to Curacao, Dutch West Indies, for refining via the Andian National Corp., Ltd., line to the northern coast.

Twenty-One Tankers Delivered in January

WASHINGTON.—Merchant shipyards delivered 21 tankers among the 120 vessels they turned out during January 1945, according to the United States Maritime Commission. Of these, 18 were T2 type, 2 were naval tankers, and the other was a private tanker.

Alaska Scene of Intensive Oil Investigation During 1944

WASHINGTON. — The Geological Survey, Department of the Interior, conducted intensive investigations of some of Alaska's oil possibilities in 1944, according to a statement by the director of the survey, William E. Wrather, to Secretary of the Interior Harold L. Ickes.

Indications of oil in Alaska are widespread and have been known for many years, although investigations of potential oil areas by the Geological Survey have been deferred in recent years because of even more pressing duties. Only a small part of the rocks that may contain oil has been tested; the possibility of the presence of substantial reserves has not been adequately determined, although certain areas are worthy of further investigation. One small oil field was developed through drilling by private organizations, but it has been inactive since 1933.

War demands have caused a heavy drain on petroleum supplies in the Pacific area, thus increasing the desirability of finding oil in Alaska. Large quantities of petroleum products must be shipped to Alaska, although the Canol project can supply part of Alaska's growing needs. Development of petroleum production in the territory would free both imported petroleum products and shipping for use elsewhere.

Most Promising Oil Area

In 1944 geological survey parties were sent to the Colville River in far northern Alaska, and to the Katalla, Iniskin, Wide Bay, and Yakataga areas on the Pacific Coast. Earlier investigations by the Geological Survey and other organizations and by individual prospectors have indicated that these are the most promising areas for oil. Under the general supervision of John C. Reed, assistant chief Alaskan geologist, and George E. Dorsey, the parties collected much new and significant information. Preliminary reports on the work in each area will soon be completed.

A party headed by Robert R. Coats and including geologist George Gryc descended part of the Colville River. The Colville, which drains most of the north slope of the Brooks Range and is the largest Alaskan river entering the Arctic Ocean, forms most of the eastern boundary of Naval Petroleum Reserve No. 4. Detailed studies were made of the rocks near the confluence of the Colville and the Chandler rivers, one of the places in Arctic Alaska where oil seeps are known.

Don J. Miller was in charge of work in the Katalla area, 50 miles southeast of Cordova. He was assisted by geologists Darwin L. Rossman and Charles A. Hickcox. About 80 square miles between Controller Bay and Bering Lake was mapped in considerable detail, revealing many previously unmapped geologic features. This area includes the Katalla oil field, which produced a small amount of oil from 1902 until 1933, when the refinery was destroyed by fire and the wells were shut down.

Kellum Directs Parties

The parties at Iniskin Bay and Wide Bay, respectively 150 miles and 350 miles southwest of Anchorage, were under the direction of Lewis B. Kellum, who is associated with the University of Michigan. The parties included geologists Helmuth Wedow, Jr., C. Melvin Swinney, and Steven N. Daviess. The work has resulted in a much clearer picture of the structure and oil possibilities of both areas. Large fossil collections now being studied in the laboratory are expected to yield information of great aid in solving problems connected with oil exploration in these and other promising areas along the Alaska Peninsula and Cook Inlet.

The party working in the Yakataga area, 130 miles southeast of Cordova, was headed by Edmund M. Spieker, who is associated with Ohio State University. The party included geologists Matt S. Walton, Jr., and Charles E. Kirschner. Detailed and reconnaissance mapping over an area of 375 square miles between the Duktoth River and Johnson Creek showed the geology to be more complex than was formerly believed. The mapping there revealed a number of geologic structures of the type in which oil commonly is found.

Ample Instruments and Regulating Valves Pledged

WASHINGTON. — Manufacturers of the industrial instruments and automatic regulating valves have advised the War Production Board that they will be able to meet production requirements provided materials and components can be obtained when required and if they are permitted to retain key personnel already reduced to the minimum.

The nature of the production job for the coming year was discussed at a joint meeting of the advisory committees with WPB officials last week. The trend of planned facility expansions in various industry programs requiring equipment produced by the instrument and automatic valve manufacturers, such as chemicals and high-octane gasoline was reviewed.

Asphalt Dealers May Sell at Higher Prices, Collect Later

WASHINGTON. — Sellers of asphalt and its products who have petitioned for an increase in their ceiling prices may sell, while the petition is pending, at prices that may be later established by official action on the petition, the Office of Price Administration announced last week.

Until a decision is reached on a petition no payments may be made in excess of the existing ceiling prices, OPA said. Any increases granted may be collected later.

All sellers of these products are given this authority, effective January 1, 1945, including refiners, resellers, distributors, roofers and retailers.

At the same time, an increase is granted in the ceiling price of slow curing asphalt when sold by refiners in Montana for use within that state. The increase, effective February 1, 1945, is from the existing level of 3¼ cents a gallon to 4¼ cents a gallon. Only two refineries are affected—at Laurel and Billings.

Craig Recalled to Aid PAW Supply Problem

WASHINGTON.—Lucien F. Craig, assistant general manager of fuel sales for Gulf Oil Corp., has been recalled to Washington to be assistant director of the supply and transportation division of the Petroleum Administration for War, a position he held from March 1943 until February 1944.

Scouts to Elect New Officers at Dallas

New officers of the National Oil Scouts & Landmen's Association will be elected at a business meeting of the organization March 26 at the Adolphus Hotel, Dallas. The regular annual membership meeting previously scheduled for March 26 and 27 has been canceled at the request of James F. Byrnes, director of the Office of War Mobilization. H. L. Johns, New Orleans, La., is retiring president of the association.

FOUNDED IN 1910

BY PATRICK C. BOYLE

the OIL AND GAS JOURNAL

A Basic Assumption

NO phase of postwar planning is more confusing and misleading than that coming from certain Washington sources having to do with future employment. The goal of 60 million jobs has been repeated so often that it is accepted by a large segment of our population as the base from which postwar operations must start.

Although several analyses have shown that the number of persons desirous and capable of employment will fall far short of 60 million, the exact figure used in the prognosis is not of itself important. The deception arises from the assumption that all that is needed to assure full prosperity is for the Government to use its powers in whatever manner it sees fit to bring about what it has termed "full" employment.

The program as outlined is for industry to employ everybody it can and then for Government, through public works construction and other subsidized activities, to take up the slack. It would seem that the exhaustive tests made of this type of employment panacea in the thirties would have revealed its weaknesses so clearly that its application on a still broader scale in the postwar period would not be seriously considered.

The "made work" procedure has little or no economic justification and should be used in an extreme emergency only with the knowledge that it is a direct charge against productive enterprise, which ultimately must pay all bills. The immediate consequences of these programs in the past have been avoided through increased taxes and an expanding national debt, which sound policy demands should be leveled off and reduced as soon as the emergency ends.

Permanent employment can only come from an economic system in which wages and other costs and profits are so balanced that all population groups can exchange their products equitably. This assumes reasonable taxation and, under our system, the full play of competitive forces.

The position of the petroleum industry as regards postwar employment does not differ materially from that of several other major industries whose activities for more than 3 years have centered on war production. The first and primary duty is the reemployment of returning service men, and that program is now under way.

The need for manpower in the rehabilitation and modernization of petroleum facilities and normal expansion will offset the contraction in war operations, most of which will be converted to peacetime requirements. In drilling and production, activities have been far below the levels justified by actual crude-oil output. All curtailments brought about by the war's restrictions in both materials and manpower will have to be made up.

There are new technologies which in their postwar applications will require thousands of new employes. A petro-chemical branch in refining is definitely established. The oil industry has a special job ahead in perfecting technical organizations which can sell and service the products of these new arts in manufacturing. There is every indication that the industry's merchandising will be expanded so this division will become the largest seller of automotive accessories.

In this projection of expanded employment from exploration to the retail stations, there is one basic assumption. Employers must be freed from war's controls and permitted to run their own businesses in business-like manner.

Crude Demand Up 6.1 Per Cent; Production Balances Needs

WASHINGTON. — Daily average demand for domestic crude oil this month is estimated by the Bureau of Mines to be 4,725,000 bbl., an increase of 270,000 bbl. (6.1 per cent) above requirements for February 1944. The forecast, explained the bureau, is based on actual trends of consumption and may be supplied either from current production or by withdrawals from storage.

The actual daily average consumption of domestic crude in November 1944 was 4,749,000 bbl., and was supplied by production of 4,747,000 bbl. daily and stock withdrawal of 2,000 bbl. daily. Preliminary figures for December, the bureau reported, indicate demand of 4,730,000 bbl. daily which involved stock reductions of about 20,000 bbl. daily. Current data for January indicate a probable demand for domestic crude of about 4,720,000 bbl. daily compared to a forecast of 4,738,000 bbl.

Actual consumption of domestic crude oil rose sharply in June and reached a peak of 4,790,000 bbl. daily in September. A moderate recession has developed in the past 4 months.

Crude-oil stocks were drawn upon heavily in the first 7 months but production and consumption were closely balanced in the last 5 months with only moderate withdrawals from storage. Total stocks of domestic crude oil amounted to 229,241,000 bbl. on November 30 compared to 249,404,000 bbl. on January 1, 1944. The total decline during 1944 is estimated at about 21,000,000 bbl.

DEMAND FOR DOMESTIC CRUDE PETROLEUM

(Daily average in 1,000 bbl.)

1944—	Prod.	Decrease in stocks	Demand
January	4,380	37	4,417
February	4,445	10	4,455
March	4,411	150	4,561
April	4,453	96	4,549
May	4,558	6	4,564
June	4,575	182	4,757
July	4,558	178	4,736
August	4,687	*4	4,683
September	4,766	24	4,790
October	4,740	11	4,751
November	4,747	2	4,749

*Increase.

Negroes and Mexicans Get Wider Employment Rights

WASHINGTON.—With both employer and union assenting, the president's committee on fair employment practice has directed Shell Oil Co., Inc., and Oil Workers International Union Local 367 (C.I.O.) to remove from their bargaining agreements provisions that limit promotional opportunities for Mexicans and Negro workers at Shell's Deer Park, Tex., refinery. The company agreed to observe the same policy in hiring new workers.

"This case stands as an excellent example of meeting the manpower shortage by utilizing the skills of minority group workers," said Malcolm Ross, chairman of the committee. "The company and the union showed that these problems can be solved voluntarily when the will to do it is present."

The committee decision directed that the seniority chart be revised to eliminate references to "Negro and Mexican laborers" and "white yard men or laborers," and that the contract between the company and union be modified "in manner and substance which is consistent" with the seniority chart revision.

B of M Awards Another Contract for Laboratory

B. L. Winner Co., Inc., of Pittsburgh, has been awarded a contract for installing foundations for the new synthetic fuels research and development laboratory of the Bureau of Mines at Bruceton, Pa. Winner's bid was $89,450, the lowest of 12 received, ranging as high as $159,000.

Construction was to start February 12 on the first of seven foundations—three for large buildings, two for buildings of medium size, and two more for smaller structures. Between 50 and 60 days will be allowed for completion of each of the foundations, which will be built in sequence as the sites are made ready.

Striving to complete the buildings late this year, the Bureau is letting separate contracts to speed up the work. The next contract to be awarded will be that for structural steel, which will be needed for erection by mid-April.

The Bruceton research and development laboratory is a part of a 5-year program recently authorized by Congress for investigating synthetic liquid fuels. To be located on government-owned land at Bruceton, a few miles south of Pittsburgh, the laboratory will work out production processes whose commercial feasibility will be proved for industry in demonstration plants to be erected later.

I.P.A.A. Holds Five Meetings in California

LOS ANGELES. — The Independent Petroleum Association of America concluded a series of five California meetings at the Bohemian Club in San Francisco, February 9. The objective of this series of meetings, held here February 6; Long Beach, February 7; Bakersfield, February 8, and San Francisco February 9, was to enable officials of the association to present their views on problems confronting the oil industry and at the same time ascertain the views of California oil men.

Attending these meetings were Ralph T. Zook, of Bradford, Pa., president of the association; Russell B. Brown, of Washington, general counsel, and C. E. Buchner, of Tulsa, executive manager. C. A. Johnson, president of Holly Development Co., Los Angeles, and I.P.A.A. vice president for Southern California, presided over the meeting and introduced the various speakers and guests.

Attendance at the various meetings was good. This is the first time executives of I.P.A.A. have visited California in an official capacity for such an extensive series of meetings. The association has a number of members in California and this visit was in part a report to those members.

Association Announces Change in Nome

LOS ANGELES.—The California Oil and Gas Association membership has voted by a large majority to change its corporate name to the Western Oil and Gas Association. Don E. Gilman, executive vice president, said the change was inspired by the fact that the association represented oil and gas interests in all of the western states and not California alone.

This is the fourth title under which the association has operated. Originally established in 1906 as the Los Angeles Chamber of Mines, in 1910 it became the Chamber of Mines and Oil. On March 29, 1929, it took the name of the California Oil and Gas Association.

Gilman stated that proper steps would be taken to protect and preserve the name of the California Oil and Gas Association.

Formal Application Pending for Hugoton-Detroit Natural-Gas Line

WASHINGTON. — A proposal to build a new gas transmission line eastward from Hugoton (Kansas) currently the subject of a hot political controversy in Detroit has not yet reached the stage of formal application to the Federal Power Commission which must grant a certificate for construction nor to the War Production Board which must allocate materials.

The project apparently grows out of rivalry among stockholder groups of United Light & Power Co. which is currently under dissolution proceedings by the Securities and Exchange Commission under the Public Utility Holding Company Act. SEC also seeks to have a subsidiary, United Light and Railways, dispose of its interests in a third-level holding company, American Light & Traction Co., which controls Michigan Consolidated Gas Co., a local distributor in Detroit and also local gas distribution companies in Milwaukee and Madison, Wis.

SEC hearings are being conducted in Philadelphia but according to information available here top officials of U.L.&P. have submitted a counter proposal under which A.L.&T. would be dissolved and turned into a new company, understood to be called Michigan Wisconsin Gas Co., to build a pipe line from Hugoton to Milwaukee and Detroit. It is also understood that U.L.&P. officials, particularly Harrison Williams and William G. Woolfolk, have gas interests in southwest Kansas.

Such a line would be some 1,700 miles long and is being discussed as being 27¼-in. diameter with a 20-in. branch from Chicago to Milwaukee and Madison. Cost estimates are given at $70,000,000.

Michigan Consolidated serves Detroit with gas from lines of Panhandle Eastern Pipe Line Co. Panhandle Eastern recently was given priorities by WPB's Office of War Utilities for $9,000,000 improvements to increase gas deliveries to Michigan-Ohio areas by 50,000,000 cu. ft. before next winter. FPC conducted a hearing on Panhandle's application for a certificate for construction on February 15. The proposed project of U.L.&P. interests presumably is being offered as an alternative.

Political controversy rose in Detroit following WPB's order of February 1 to curtail industrial users of gas in that area owing to emergency cold weather. Detroit congressmen here are charging that delay and confusion of Michigan Consolidated in applying this order was due to attempt by Consolidated to use the crisis as an argument for the new U.L.&P. line. Panhandle protested to the Detroit city council which ordered an investigation. It is understood that cities of Detroit, Madison and Milwaukee plan to be represented at any future hearings before SEC of FPC on this matter.

W.P.R.A. and N.G.A.A. Head Attack on Proposed Oklahoma Gasoline Tax

OKLAHOMA CITY. — Oklahoma refiners, consisting chiefly of independents and comparatively small integrated companies, this week faced a threatened new state tax of 1 cent per gallon on gasoline manufactured within the state.

Western Petroleum Refiners Association and the Natural Gasoline Association of America spearheaded the opposition which claimed that the proposed levy would jeopardize the position of the schools rather than benefit them because Oklahoma refiners would be encouraged to locate their plants outside the state. Only 25 per cent of the petroleum products manufactured in Oklahoma, W.P.R.A. asserted, are consumed within the state.

"A manufacturer's tax of this nature," declared a W.P.R.A. memorandum, "would discourage further expansion and operation of existing plants in Oklahoma. It is very probable that some of the present refiners, which have been unable to keep abreast of the times during the war-period by installing new equipment, are considering moving their manufacturing facilities to more congested trade areas and larger markets. If a tax of this nature were imposed and the refining industry eventually moved from Oklahoma, it would fall upon all the citizens of this state, farmers as well as tradesmen, instead of the refiner, to meet the increased proposed school budget.

"Since 1930 the refiners and gasoline manufacturers in Oklahoma have had more years of nonprofit than of profit. In 1940 they were beginning to make a small profit. Since 1940 refining costs have increased materially due to increased wage costs and more man hours required to maintain production or do the same job. Materials such as chemicals required for treating, repairing of equipment broken down due to war strain, increased federal taxes, and many other troubles have added to the refiners' problems. Rules and regulations of both federal and state governments now cause many hardships to be placed on the refiner.

"This proposed tax of 1 cent per gallon on the manufacturer of gasoline would represent approximately 19 cents increase on the cost of each barrel of crude put through the refinery, which is more than the net realization after all expenses, operating costs, crude costs, and losses, excluding taxes, on the refiner are met. Conditions have been such in the refining industry for the past several years that it has been next to impossible to make even a nominal return on the money invested. The gasoline realized from each barrel of crude processed is approximately 45 per cent or 19 gal."

"Enactment of this proposed measure," said the N.G.A.A., "would cause the suspension of operations of all 94 Oklahoma natural-gasoline plants except a few of the latest and most modernly equipped."

N.G.A.A. pointed out that the annual average price received by Oklahoma manufacturers of natural gasoline over the past 10 years has been 3.39 cents per gallon.

"It is readily apparent," N.G.A.A. argued, "that a 1-cent tax per gallon would represent approximately 30 per cent of the sales price received for that product. In only three of the prewar years noted would this percentage have been slightly less. For the other prewar years, which are normal years, this percentage could have risen to more than 50 per cent of the sales price."

Committee Head Denies Having Postwar Aims

WASHINGTON. — E. B. Swanson, chairman of the Interior Department's new departmental petroleum committee, denied last week that the organization has any designs on postwar perpetuation of emergency regulations over the oil industry.

The committee, Swanson said, was the culmination of earlier at-

tempts to coordinate the petroleum affairs of the Interior Department.

The committee acts, Swanson gave assurance, only when its policies are adopted unanimously, and has nothing to do with the administration of the 15,000 laws relating to petroleum, whose administration now is vested in the Bureau of Mines, Geological Survey, General Land Office, Office of Indian Affairs, and Division of Islands and Territories.

Swanson said the committee had not been considered, and was not being considered, as an agency through which recommendations of international commissions such as that proposed in the Anglo-American petroleum agreement would be served to the petroleum industry, in an attempt to protect the industry against prosecution under the antitrust laws.

Seven functions outlined for the committee were cited, and Swanson commented:

"We are not an operating committee in any sense of the word. Those matters are handled by the individual bureaus within the department, and are none of our concern."

Michael W. Straus, assistant secretary of the interior, said, however, that at least three additional functions would have to be administered by the Interior Department in the postwar period, when the United States is expected to become an oil importer—the synthetic-fuel program, the conservation program, and the import program.

Straus said it remained to be decided whether high tariffs would be imposed on imports of oil in an effort to protect United States production, or if the nation's oil resources would be considered so valuable that imports would be encouraged.

In either event, Straus said, there would be a great increase in the number of petroleum matters handled by the Interior Department in the postwar period.

Southwestern Gas Course Meeting Dates Set

April 17, 18 and 19, have been set by the General Committee of the Southwestern Gas Measurement Short Course as the dates for this year's school at the University of Oklahoma, Norman, Okla. Specialized training in gas measurement and related work, the course offers educational opportunities to those engaged in this field of the gas industry.

The War Committee on Conventions of the Office of Defense Transportation has reviewed the past activities of the Southwestern Gas Measurement Short Course and has ruled that it does not come within the scope of the government restrictions on conventions. The ruling was made because the short course can in no way be considered a convention, but is a regularly scheduled educational project of the College of Engineering, University of Oklahoma.

Tax for Oil Compact Body Now Made Permanent

OKLAHOMA CITY.—Both houses of the Oklahoma Legislature have passed a bill making permanent a levy on the state's gross production tax to maintain the Interstate Oil Oil Compact Commission as well as the Conservation Department of the Oklahoma Corporation Commission. Under the law which is thus made permanent a tax of 1 mill is imposed on each barrel of oil produced. One-sixth of it is set aside for support of the Compact Commission and five-sixths for the Conservation Department. Hitherto the legislature has acted on the tax every 2 years.

Committee Will Consider Movement of Asphalt

WASHINGTON.—Appointment of a temporary special asphalt transportation committee, composed of the representatives of various government agencies to consider the 1945 movement of asphalt and road tar, has been announced by Office of Defense Transportation.

The agencies represented on the committee, besides ODT, are the Petroleum Administration for War, War Production Board, Public Roads Administration, U.S. Army Engineers and Civil Aeronautics Administration.

Col. J. Monroe Johnson, director of ODT, explained that the committee will act in an advisory capacity to ODT in reducing the movement of asphalt as much as possible and eliminating long hauls and cross hauls. Colonel Johnson emphasized that, should a restrictive order be found necessary, it would not be issued until after a conference of the committee has been held with representatives of the tar and asphalt industries.

Levorsen to Join Faculty Of Stanford University

A. I. Levorsen, nationally known geologist and author, is to leave Tulsa, where he is a consultant, next fall and become chairman of the geology department of Stanford University, California. Levorsen, whose books and articles are considered authoritative in the field of subsurface science, has lectured in 18 universities in recent years.

DEATHS

William Kinkade, 93, oldest annuitant of Standard Oil Co. of New Jersey, by which he had been employed more than 40 years when he retired in 1919, died February 8 in Westfield, N. J. He was foreman of the acid processing division of the old Bergenport Chemical Works at the time of his retirement.

Lt. Floyd F. Grant, 29, an accountant for Shell Oil Co., Inc., in Tulsa before he entered war service, was killed January 18 in Belgium, where he was in an infantry unit of the Third Army. A brother, Roy F. Grant, a bombardier, was killed over Hamburg January 31, 1943.

George H. Mettam, 55, Bayonne, N. J., director and assistant general manager of manufacturing operations for Standard Oil Co. of New Jersey, died January 6 in New York. Mettam, who was in the company's service 36 years, was for 9 months director of refining for Petroleum Administration for War in District 1. He had served as vice president of New Jersey State Chamber of Commerce and chairman of its industrial committee on developments; president of Bayonne Chamber of Commerce, and director of Bayonne Industrial Y.M.C.A.

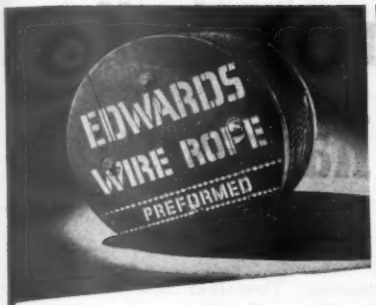
W. T. Rapp, 53, oil operator and drilling contractor of Shawnee, Okla., died February 9 in an Oklahoma City hospital.

Henry O. Dumas, independent oil operator, died February 6 in Shreveport.

Clarence E. Young, 51, secretary-treasurer of Valley Pipe Line Co., died at Calgary February 6.

Richard M. Young, 68, former president of The Carter Oil Co., died February 11 in Tulsa. Young entered the oil business at 17 when he got an office job with Forest Oil Co. in Pittsburgh. Jobs with various oil companies followed, and in 1906 he joined Standard Oil Co. of New Jersey in Pittsburgh. He went to Tulsa in 1917 with Carter and the next year was made vice president and general manager. He was advanced to president in 1926 and the next year he was elected a director of Standard Oil Co. of New Jersey. He retired in 1932.

William J. Hutchinson, 61, oil producer of Clintonville, Pa., died February 9.



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Water-Flood Operations Automatically Controlled in Eastern Kansas

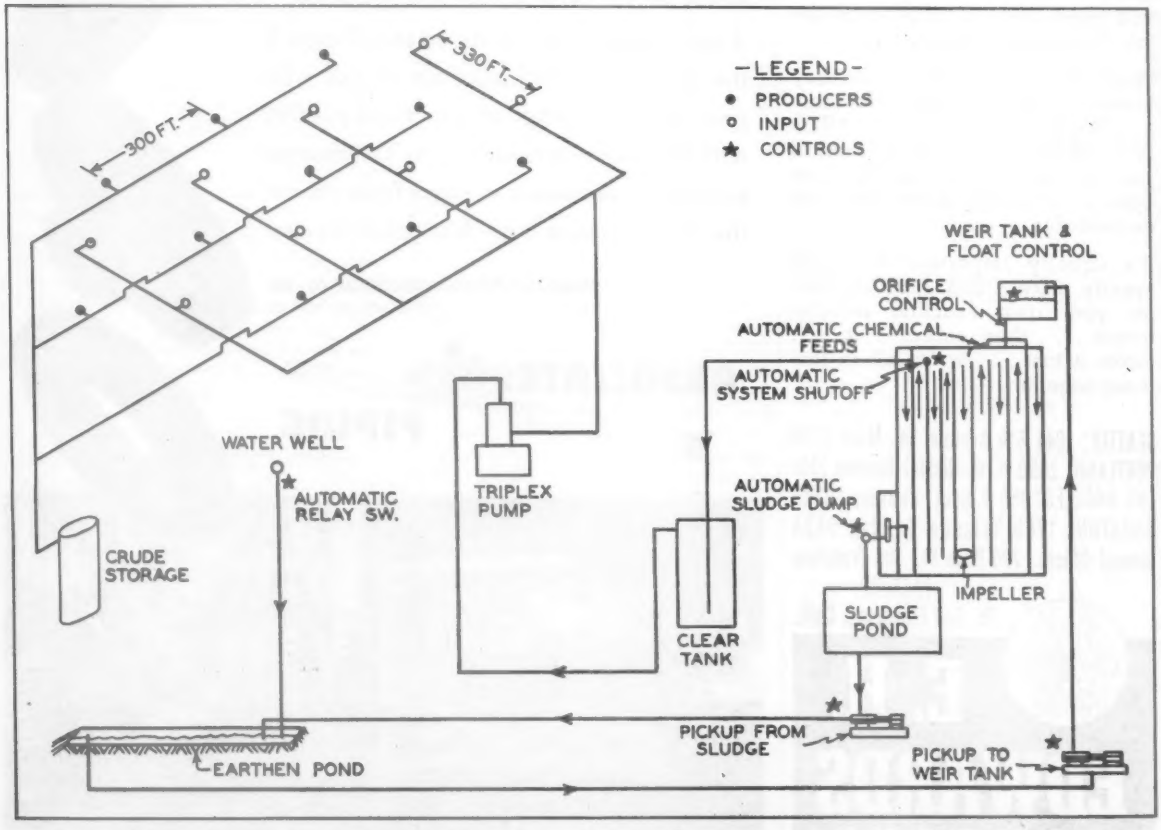
by Frank B. Taylor

This article describes an operation in which Squirrel sand is being flooded in Anderson County, Kansas. Modern equipment, automatic controls, and a layout based on advanced engineering principles make the operation outstanding.

ONE of the most interesting of operations among the newer water floods in eastern Kansas, is Kewanee Oil Co.'s project near Garnett, Anderson County, where Squirrel sand is being flooded. In addition to utilizing the most modern advancements in equipment and engineering layout, the operation has installed automatic controls for the dual purposes of safeguarding equipment in case of unexpected difficulty and to provide insurance toward uninterrupted operation with a minimum of attention. The practical use of this advanced equipment has already been proved during the delay period, or throughout the time pressure has been building up in the sand body prior to actually putting the wells on production. While most of the control featurs are electrical in operation, some are mechanical.

General layout of the operation, in addition to incorporating modern equipment, is of the flowing-production type with the pattern being a five-spot, 330 ft. by 330 ft. water well to water well spacing, and a 300 ft. by 300 ft. producer to producer spacing. The flood is on a shoestring of early development in Section 33-20-21e. Provided the operation is as successful as is anticipated, its original size will be expanded. Provision has been made for this in the choice of equipment.

Main plant units are engineered around the conventional flood plan with a 120-hp. main engine, fueled by crude oil, furnishing operating power. Main water pump is a triplex driven from the stub shaft of the main unit, and is capable of delivering 4,500 bbl. daily to input wells at a pressure of 600 lb. The operator is generating lease power for the project by means of a 50-kw. generator, "V"-belt driven from the main engine, delivering 110-volt current at 60 cycles for operation. While as much of the lease equipment is electrically operated as is consistent with good practice, this generator is entirely sufficient for production will be flowed except at some of the edge wells. By flowing rather than lifting the production, the general power load is materially reduced.



General flow diagram of the operation, which utilizes modern advancements in equipment and engineering layout

A complete control panel at the main plant includes control switches for raw water supply, obtained from a well drilled into Siliceous lime below 1,400 ft. Water is lifted from this source by means of a 4¾-in. casing pump at 400 ft., and has been tested at 3,000 bbl. daily. A beam unit is employed with a 20-hp. motor drive which can be turned off or on by means of relays connected to the main panel control.

Treatment Controls

Siliceous lime water is produced into an earthen pond from which it flows by gravity to a pickup which in turn delivers it to the stabilizer tank where it is treated with lime and alum. The level of the water in the weir tank, which is of metal construction and approximately 3 ft. by 3 ft., carries a butterfly valve which automatically controls this water volume by controlling the input rate. The output from the weir tank is through an orifice plate which is changeable in order to control the volumes to be treated.

While the safety float on the water in the weir tank merely controls that volume, another float actuated by the water level in the treater tank can cut off the pickup pump delivering into the weir tank, shut down the two automatic chemical feeders, shut off the aerator blower, shut off the electrically driven impeller in the treater, and cut off the automatically timed sludge dump valve. Without cutting off the latter, the tank would ventually be emptied of all fluid in case of interruption elsewhere in the system. Control of the chemical feeders is necessary in order that they not overtreat the water volume in the tank at the time of interruption. Connection between this safety control and related equipment is electrical.

Automatic Sludge Dump

The treating tank enclosing five concentric and cylindrical baffles diverts the water course continuously and maintains flow by means of an electrically driven impeller referred to as being connected to the treater-tank safety-float control. As it is necessary to knock out the carbonates in the raw water, alum and lime are dry fed through chemical hoppers.

The over-all efficiency of the entire treatment may be judged by the volume of chemicals used. Nine pounds of lime and two of alum are used daily to handle the current throughput of some 600 bbl. This is an exceptionally low treatment cost compared with other figures on the treatment of similar waters from the same formation.

Sludge resulting from treatment is collected in an accumulator tank, indicated in an accompanying sketch, from which it is automatically dumped into a sludge pit. This is accomplished through the use of a solenoid intermittently operating the sludge blowoff. The solenoid is operated by a manually set, electrically driven timer regulated to dump the sludge as might be indicated by checking the deposition of sludge and the rapidity of its formation by means of ⅜-in. sample cocks connected to thief lines. The solenoid valve is operated by 30-lb. water pressure derived from one of the main lines to input wells, with a regulator reducing the pressure from a current 400-lb. line pressure.

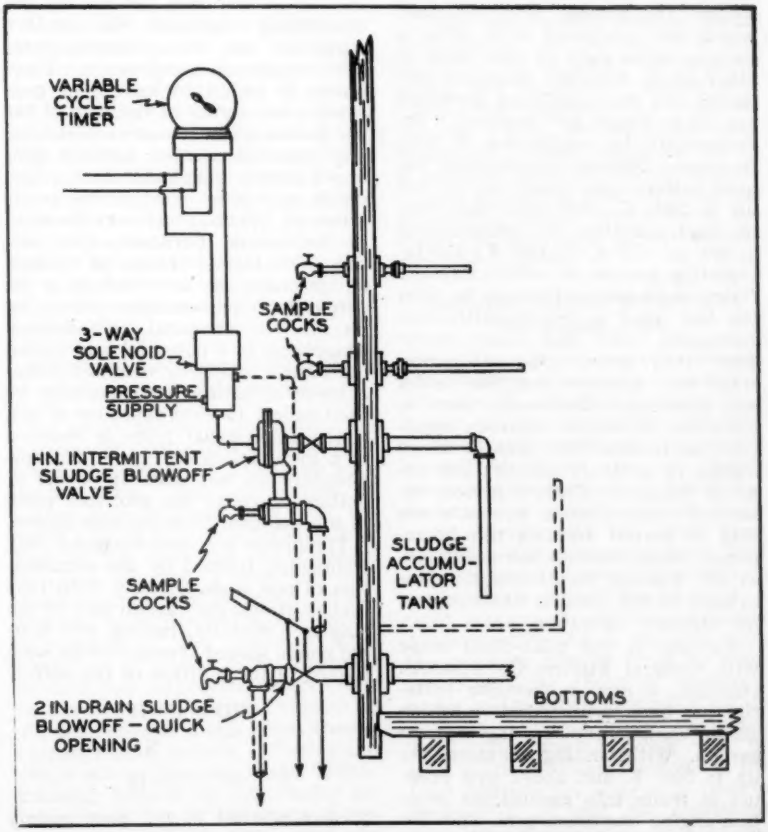
Accumulated sludge dumped into the sludge pond frees some water after continued settling, and this again is automatically controlled by means of a float actuating a motor-driven pickup pump. This pickup lifts the water from the sludge pond after it reaches a predetermined level, returning it to the raw-water reservoir.

Filtration

After the raw water is treated, it passes through the filter, this being of the gravity type with carefully graded beds of hard coal the filtering material. Six months' use of this system of filtration has proved highly satisfactory with carefree operation and very low maintenance costs per barrel of water handled. After passing through the filter, the water is again picked up by an electrically driven pump and is run into a 500-bbl., wood, clear tank. From here the water moves by gravity into the triplex pump for pressuring to the input wells.

While the complete layout follows accepted practice, the safety and automatic features, as well as the general design, have proved very efficient. The plant is now handling 600 bbl. daily to the field during the last stage of the delay before opening up the producers. Very little trouble has been encountered, and no more is to be anticipated when the operation goes to its designed capacity of 4,500 bbl. daily at 600 lb.

Equipment and design of the entire operation have saved at least one earthen pond from the initial investment, and in addition has reduced operating costs below what had at first been anticipated. Due to the surplus of electric power, it will be practical to treat cut crudes which will be produced as the operation nears depletion. Safety, minimum demand in actual man hours of attention, and insurance against damages resulting from interruptions are provided by the automatic features installed.



Automatic sludge controls in treating system

Front Lines in

REFINING

by Arch L. Foster

Silicones Incombustible Organics?

SILICONES is the name applied to a family of products, the result of long years of pure research, in which silicon, one of the rarer metals now much used also in metallic alloys, is combined with organic nuclei to produce compounds with the most remarkable and unusual properties. Strange to say silicon, although now common as a metal, is next to oxygen the most common element on the earth, forming nearly 30 per cent of all material within reach of the human race.

Practical applications of silicones seem very numerous, scientists say. Resins are formed from silicones which are combined with glass in various forms such as spun glass or other finely divisible inorganic materials and thus insulating materials are made which are practically indestructible by application of heat. In other chemical compositions liquid silicones are made which boil up to 200° C. (392° F.); they stay in fluid condition to temperatures as low as —70° C. (—158° F.) For lubricating greases in substratosphere flying these products seem to offer the last word in practicability. For insulating radio and radar equipment they seem to permit operations not hitherto possible under any conditions. Extremely inert to corrosive chemicals, they are applicable to innumerable uses in which metals or ordinary plastics are entirely unsuited. Electric motors insulated with silicone products are said to permit trebling the horsepower rating without increasing size at all. Electric transformers so insulated do not require water coolers for efficient operation.

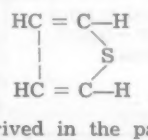
Already in the pilot-plant stage with General Electric Co. research chemists, a new rubber-like material has been synthesized in which silicon element replaces the element carbon. Withstanding temperatures up to 300° F. and above this product is made into gaskets for aviation-engine superchargers and for supercharging substratosphere-plane cabins.

Application of such a material to the plastic industry may and doubtless will greatly reduce or eliminate one of the most objectionable disadvantages of organic plastics—sensitivity to heat and chemical attack. The chemistry of this field is said to be highly involved but much research is exploring its frontiers rapidly.

Sulfur, Active But Well Behaved

PRODUCTION of thiophene from petroleum "at a cost said to make it commercially attractive," as announced by Socony-Vacuum Oil Co., Inc., is another step forward by the oil-refining industry to produce chemicals and their intermediates from crude-oil components. Thiophene is stated to have cost purchasers heretofore at the rate of $54 per pound when it was required for any chemical or other purpose. Socony-Vacuum mentions that thiophene may alter or affect the properties of plastics such as elasticity or brittleness, hardness, etc., and the physiological results of medicinal preparations in which it is incorporated, presumably either by physical or chemical combination. Thiophene is a potential and actual ingredient of highly complex molecules of dyestuffs, and thus may be used widely to form dyes new or old, if the commercial price is reduced to a more tolerable figure. The announcers do not state in terms of dollars or cents the probable price of the material from its new source.

Thiophene is a heterogeneous ring compound, formed by the combination of one atom of sulfur with four carbon atoms; the carbon part of the ring is a diolefin, having two double bonds spaced symmetrically with regard to the position of the sulfur;



It was derived in the past mainly from coal tar distillate but is found as such in petroleum and is one of the less reactive compounds of sulfur. It is exceeded in reactivity, especially as to its corrosiveness to metals, by the polysulfides, disulfides, sulfides, mercaptans, and hydrogen sulfide in ascending order of reactivity. It enters into combination with numerous organic nuclei to form highly complex molecules such as sulfur dyes, etc.

In petroleum it is deleterious mainly for its habit of decomposing under elevated temperatures and pressures to release more corrosive sulfur products which attack the metal of cracking stills, towers, and other equipment. It forms thermoplastic resins in combination with aldehydes such as formaldehyde and acetaldehyde. It may replace the benzene radical, or phenol and other anologous compounds in various syntheses, yielding products varying in structure and properties.

Socony-Vacuum is operating a small pilot plant, and is building a larger one, where it will make samples available to interested laboratories.

High V. I. Ethylhexyl Sebacate

FOR imparting high-viscosity-index properties to mineral lubricating oils low in this property, a new product, 2-ethylhexyl sebacate, which has a viscosity index of 150, Cleveland open-cup flash of above 400° F., pour point below —70° F., boiling point of 492° F. at 5 mm. absolute pressure. This product is said to show viscosities of from 12.7 centistokes at 100° F. to 3.3 centistokes at 210° F. By comparison a 100-V. I. mineral oil of S.A.E. 10 grade will show about 38 centistokes at 100° F. and 5.75 centistokes at 210° F.

Its evaporation loss at 300° F. for a given period of hours is considerably less than that of a mineral oil of the same viscosity. It is also said to show increased film strength and load-carrying ability over mineral oils of the same viscosity, although not so high in this property as some other special film strength products. In several cases this additive has improved the anticorrosion quality of mineral oils. It is miscible in all proportions with all mineral oils so far tested by the makers, Rohm & Haas, at all temperatures down to the freezing points of the oils. Alcohol is used in the manufacture of this synthetic product, and it is not on the WPB allocation list, but a statement of end use must be supplied by purchasers. It shows about the same oxidation properties as do good mineral oils, and offers good possibilities, it appears, for solutions of some stability problems for crankcase oil.

Exploration Aided by Early Pressure Measurements

by J. A. Heerin

EVER since the introduction of the bottom-hole-pressure bomb, bottom-hole-pressure data have become increasingly important as a tool of production control, and as a means of solving producing problems. They are used extensively in the calculation of reserves by both the material balance method and the graphic pressure versus production curves. Thus, pressure data are used at present almost exclusively by the production engineers.

One of the first to recognize the potential value of pressure data as a means of geological analysis, C. V. Millikan* pointed out, among other things, that bottom-hole-pressure data could be used to solve geological problems as well as production problems. It is with a view of extending the use of pressure data along geological exploratory lines that this discussion is presented.

It has been found practicable to use bottom-hole-pressure data as an exploratory tool under certain conditions. In one of the applications discussed herein, it is desirable to have bottom-hole-sample data available. As in the case of any other exploratory method dependent upon interpretive analysis, the conclusions reached from pressure relationships are largely qualitative rather than quantitative, and should be regarded in this light pending a test by the drill. Following are three uses of pressure data which are considered exploratory in character.

1. Determination of the possible presence of unproved reserves beyond the limits of a developed area.
2. Determination of the presence of an unproved reserve adjacent to the developed area of a given reservoir.
3. Approximation of the oil-filled closure of an undeveloped reservoir, and approximation of the productive area where structural control is present.

Since the exploratory operations of the oil industry are characterized by highly competitive conditions and because the conditions amenable to analysis by pressure data recur repeatedly during the development and exploitation of oil reservoirs, it follows that the operator having the proper kind of pressure information has an advantage over other operators. Having the information, he may buy or sell leases or royalty with much more assurance as to their relative value than he could without such information. Also, he is enabled to proceed with development with more certainty because of a reduction in dry-hole hazard.

With these considerations in mind it is apparent that the securing of adequate pressure information will redound to an operator's advantage over a period of time. To be in the best possible position to capitalize on pressure information, the operator should have, in addition to pressure data taken in connection with reservoir control, initial pressure readings in new discoveries, in dry holes adjacent to new discoveries, and in wildcat wells in oil-producing territory even though they are dry.

Some understanding of the regional stratigraphy and the lithologic character of the sediments in the area under consideration is necessary because usually only those pressures taken in the same stratigraphic unit are correlative. Also, the permeability characteristics of the reservoir rock as well as structural features will control pressure distribution where a drawdown occurs. Considerable care must also be taken to evaluate the time of well completion and fluid withdrawals therefrom.

Unproved Reserves Beyond the Limit of a Developed Area

It seems possible to predict the presence of unproved reserves which are in proximity to a defined producing field. This application of bottom-hole-pressure data will require a fairly complete pressure history of the field. In the majority of cases wherein a reservoir produces by means of hydrocarbon expansion, accompanied by some water encroachment, the pressure drop would be a minimum at the point nearest the unproven reserve due to the fact that a given volume of oil will expand much more than a corresponding volume of water under a given pressure drop. Unfortunately differential edge-water encroachment due to variations in reservoir permeability will give the same effect, so that considerable judgment is required in the analysis. In the case of a reservoir producing by means of water drive, it is doubtful that the pressure pattern would be definitive. In the case of a reservoir having an abnormal pressure which was maintained during production, the presence of an unproven reserve would be indicated even though its location might not be. In a reservoir characterized by hydrocarbon expansion only, any nearby connected reserve would have the same characteristics as the following classification.

Unproved Reserves Adjacent to Developed Area

Pressure data have been successfully used to predict the presence of oil reserves adjacent to producing fields, which resulted in development of field extensions. In general it will be found that the fields wherein this method is found applicable are limestone-type reservoirs characterized by erratic permeability, and where the field limit has apparently been defined by a well which either encountered a tight section or which was inadequately tested. As in the first case, the pressure history must be complete, and the reservoir operating under hydrocarbon expansion, either with or without water encroachment. The pressure drop will be least pronounced on the edge of the field nearest the unproven reserve because of oil and gas movement from the undeveloped area to the developed area.

The author is associate professor of petroleum production in the University of Tulsa college of engineering, a position to which he was appointed last August. Prior to that he had for 10 years been an engineer for Stanolind Oil & Gas Co. He was graduated from Colorado School of Mines in 1934 with a degree in petroleum engineering, and worked for Midwest Refining Co. prior to joining Stanolind.

*C. V. Millikan; "Geological Application of Bottom-Hole Pressures;" Vol. 16, No. 9; American Association of Petroleum Geologists; September, 1932; pp. 891-906.

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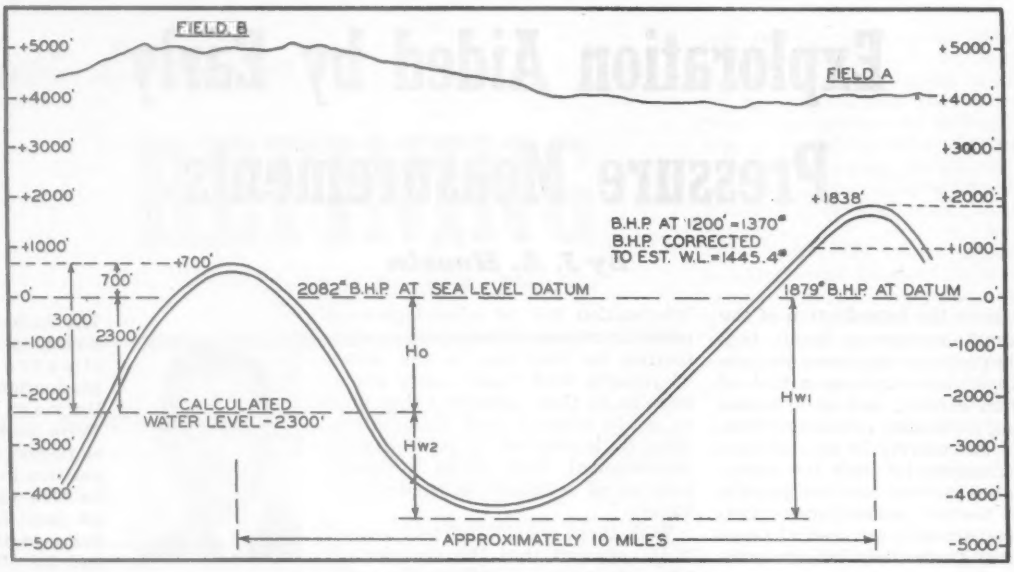

Fig. 1—Relative position of new field B to old field A

Approximation of Oil-Filled Closure and Productive Area

Bottom-hole-pressure data used in conjunction with bottom-hole-sample data have been used to determine the oil-filled closure of a structure, and also the extent of the productive area. This calculation requires use of initial pressures at two points, one inside the productive area, and the other outside the productive area. The method is applicable to any oil reservoir connected to and in equilibrium with the surrounding aquifer. The more precise the pressure data, the more accurate will be the approximation of the water level and the productive area. In certain localities it might be possible to use an average depth gradient for the pressure outside the oil pool, but such calculations would in general be untrustworthy. In the absence of accurate data, it is possible to make certain assumptions and use incomplete data and secure some control, particularly in areas characterized by strong closures.

The calculation of the oil-filled closure of a structure is based upon the principle that the pressure exerted by a column of fluid is a function of its density. In a two-fluid system with pressures and densities known at two points, and a known vertical distance between the points, it is possible to calculate the position of the interface of the fluids.

Illustrated herewith are the calculations made by the writer to determine the oil-filled closure of a new field upon completion of the second well, using pressure and sample data from this well and incomplete pressure data from a nearby field. Having approximated the oil-filled closure, the productive area of the field was estimated. Fig. 1 shows the relative position of new field "B" to old field "A," and the major features taken into account in the calculation. The original pressure in old field "A" was not available, but had to be estimated by extrapolation of a curve. Since the pressure in the new field was taken while the other well, a 40-acre-location offset was producing, and is not, in the strict sense, an original pressure, a straight line extrapolation of pressures versus producing rate in field "A" was considered applicable, although it was known to be inaccurate. Also, it was recognized that the pressure drop in the aquifer occasioned by withdrawals made in field "A" might extend to field "B." This was considered as being much less significant in this particular case than the two known errors pointed out above. Since the calculations indicate an oil-filled closure of 3,000 ft. as compared with a presently proven closure of 2,000 ft., and which cannot exceed 2,400 ft. because of dry-hole control, it is fairly certain that the extrapolated original pressure in field "A" was too low.

Following are the data and calculations made in connection with the approximation of the water level in field "B."

RESERVOIR DATA FIELD "A"

Gas-oil ratio of oil produced, cu. ft./bbl. (approximate)	75
Gravity stock tank oil at 60°F., A.P.I.	28.8
Gravity reservoir oil, A.P.I. (estimated)	31.0
Temperature of reservoir, °F.	92
Specific gravity reservoir oil	.87
Pressure exerted per foot head of reservoir oil, p.s.i.	.377
Orig. bottom-hole pressure at datum +1,200 above sea level p.s.i. (extrapolated)	1,370
Original water-level elevation above sea level (estimated)	+1,000
Original bottom-hole pressure at water level (calculated)	1,445.4
Pressure exerted per foot head of formation water p.s.i.	.4335
Original bottom-hole pressure at sea level datum p.s.i.	1,879

RESERVOIR DATA FIELD "B"

Gas oil ratio of oil produced, cu. ft./bbl. (variable with structural position)	350
Gravity stock tank oil at 60°F., A.P.I.	30
Gravity reservoir oil, ° A.P.I. (from bottom-hole sample analysis; and variable with structural position)	46
Temperature reservoir, °F.	123
Specific gravity reservoir oil	.7970
Pressure exerted per foot head reservoir oil, p.s.i.	.3456
Measured original bottom-hole pressure at sea-level datum (approx.; offset well flowing)	2,082
Estimated apex of pay sand above sea level	+700

Calculation of Water Level in Field "B"

Solution:

Let H_o = Height of oil column from sea level to water level of field "B"

H_{w_1} = Height of water column from water level in field "A" to a point below water level in field "B"

H_{w_2} = Height of water column from water level in field "B" to a point below water level in field "B"

$$2{,}082 + (H_o \times .3456) + (H_{w_2} \times .4335) = 1{,}879 + (H_{w_1} \times .4335)$$

$$.3456\ H_o + .4335\ H_{w_2} = 203 + .4335\ H_{w_1}$$

and $H_{w_2} = H_{w_1} - H_o$

$$.0879\ H_o = 203$$

$$H_o = \frac{203}{.0879} = 2{,}310$$

Water level = approximately —2,300

Total oil filled closure = (700 ft. + 2,300 ft.) = 3,000 ft.

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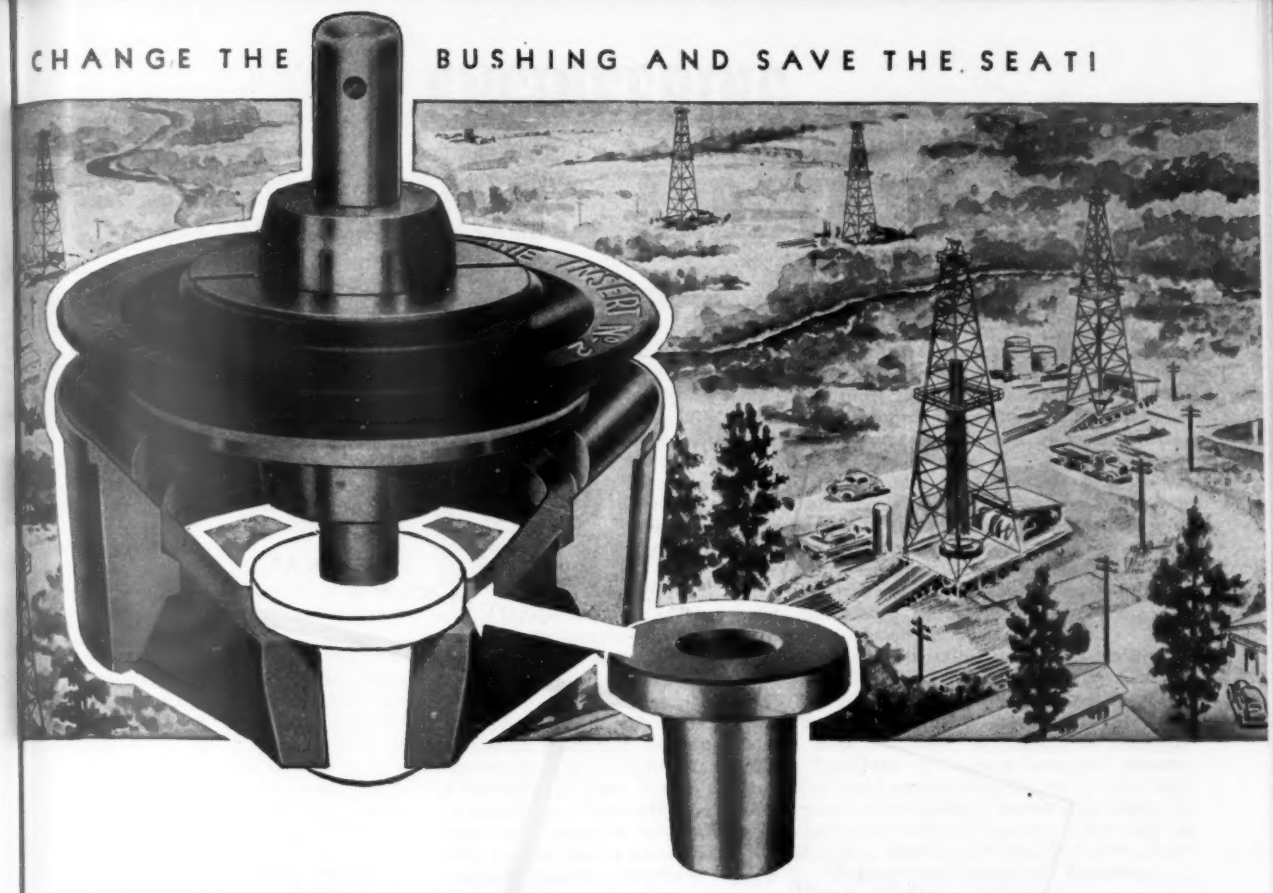

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ENGINEERING SALESMANSHIP AND TRAINING

by L. C. Welch

In this article the author explains his belief that an engineer is still an engineer, even when he is not actually engaged in the more traditional engineering activities of research, development, design, construction, production, and operation. The article is particularly timely, due to the widening role of the engineer in recent years, and to the fact that postwar years will undoubtedly see an acceleration of the trend toward calling upon engineers to fill positions in activities and business other than strictly engineering.

Due to the large number of new and improved products from refinery operations and because of the widening technology of the entire petroleum industry, sales engineering will greatly increase in importance in the postwar period.

The author is general manager of the lubricating and sales technical service departments, Standard Oil Co. (Indiana). A graduate of Cornell in mechanical engineering in 1906, he worked for Ohio Oil Co., Buckeye Pipe Line Co., Northern Pipe Line Co., and National Transit Co. In 1917 he joined Midwest Refining Co. as chief engineer in charge of refinery construction at Casper, Wyo. When Standard of Indiana acquired control of Midwest in 1921, Welch continued to hold supervisory posts in sales and lubricants for Standard. In 1934 he was made assistant general manager of sales in charge of lubricating and technical service departments, and in 1944 was elected a director. This article is a slightly abridged version of an address recently presented before the Engineering Society of Detroit.

MUCH has been written about the definition of an engineer. Dr. R. E. Doherty, president of Carnegie Tech, gives as his definition:

"Engineering is the art, based primarily upon training in mathematics and the physical sciences, of utilizing economically the forces and materials of nature for the benefit of mankind."

Dr. Doherty has also said:

"We must not confuse what an engineer happens to do with what engineering is."

Paraphrasing his words further, Dr. Doherty has said: "The engineer's particular qualification for management, or whatever else he chooses to do, is his method. It is his method that distinguishes him from other professional men. His is the method of reaching conclusions by starting with known facts and established principles. This is the method that by logical reasoning and resourcefulness, progresses in an orderly step-by-step manner, avoiding the pitfalls of wishful thinking and the snares of personal or political operations."

In short, this is the scientific method.

Engineer and Craftsman

Right here we can draw a distinction that has been made between the engineer and the craftsman—a distinction which is important educationally as well as in application. An engineer's work is characterized largely by rational processes, whereas some professional work, or the craftsman's work, is characterized largely by rule-of-thumb methods. Certainly the work of the sales engineer requires the application of the scientific method and rational processes. Only in this way can one engineer persuade or help another engineer, and that is what is involved in the sales engineer's work.

The demand for college-trained engineers has fluctuated to some extent with the economic conditions of the times, and, I assume, it reached its lowest ebb during 1931-1933. However, before my time at Cornell, representatives from companies like General Electric, Westinghouse and Allis-Chalmers were soliciting the more likely students long before their graduation, and that situation has, in general, continued with increased competition throughout the period. These men, at least from the larger schools, have always been absorbed by industry. This is a tribute to the recognition that is being given to men of such training in practically every industrial activity.

The use that has been made of all engineering training and educational facilities of the country including universities, colleges, primary and secondary schools, the intensified courses given the officers and enlisted men of the U. S. Army and Navy is a further indication of the great importance placed upon such training by the armed forces in conducting an all-out war.

The miraculous accomplishments of the engineers of industry and the engineers of the armed forces in these war days must, when the history has finally been written, certainly be regarded as one of the greatest forces contributing to the winning of the war. The use that has been made of engineers by industry and the nation is a great tribute to basic engineering training and to the engineering profession.

The Sales Engineer

The question naturally arises—is sales engineering a proper activity in the profession of engineering? Does it lower the professional standards to serve the marketing department instead of, say, the manufacturing, research, or development departments? I would like to suggest that the answer is "No", and that sales engineers, engineering societies and other groups do more convincing selling to their universities and engineering schools on the need of including in their curriculums for engineers, more time on subjects of prime importance to the sales engineer such as: History; economics, labor conditions and problems; torts and contracts; money, currency, and banking; English, public speaking.

Qualifications and Characteristics

Let us consider for a moment this "sales engineer". What must be his qualifications and characteristics?

(a) He must be a capable engineer with a thorough knowledge of the manufacture and all possible applications of his products.

(b) He must have a pleasing personality, be able to speak well, use good English, and, if possible, have some knowledge of contracts.

(c) He must like people, have the ability to get along with people, win their confidence, respect and good will. In fact, he must have the ability to sell himself as well as the products and his company.

In our sales-engineering circles we have an exaggerated saying that goes like this:

(a) "A man may be a cracker-jack of an engineer technically, but if

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he has a poor selling personality, he will never make the grade as a sales engineer."

(b) "A man of good selling personality, but who is not necessarily a technical engineer, may make the grade."

I am not in accord with this statement, for, in my opinion, it takes a man with unusual ability in both lines to qualify as a successful sales engineer and men of these qualifications are most difficult to find.

Although, according to several studies, sales engineering is continually growing as a source of employment, particularly for mechanical, chemical, electrical, administrative and petroleum engineers, possibly one of the reasons why some employers still do not look with too much favor upon the employment of such talent, is based upon the assumption that engineers in general do not have the personal qualifications to meet the public and establish the confidence, respect and good will desired. This assumption is due, no doubt, to the observation that so many in the engineering profession have been of the introvert type or have been so engrossed in the technical phases of engineering work that they have not developed the human qualifications necessary for getting along with people.

My own history is illustrative of the thing that has taken place and is taking place in the relation of the engineering profession to marketing and selling, rather than, for example, production and manufacturing. If you will pardon just a few personal allusions, may I confess that when I graduated in engineering at Cornell University, I had, as I assume most of you had at the time of graduation, no expectation but that my life's work would be strictly along the established, at that time, engineering lines. For a number of years after leaving the university, my work was solely engineering, mechanical and civil, such as is involved in the construction and operation of pumping stations and trunk pipe lines for the transportation of petroleum (crude oil) and then for a number of years in the engineering work involved in the construction and operation of refineries, which included among other things the erection and operation of equipment for the manufacture of high-grade lubricating products.

During this period I became interested, at the insistence of my employers, in the marketing of these products. The assumption was that a man who had built the plant, had been instrumental in its initial operation, ought to know something about the products produced and ought to qualify as a sales engineer. Later these activities were expanded to include the management phase of the marketing of lubricating oils, greases, and specialties. The need for technically trained men in marketing activities of this kind was already making itself felt. But what happened later in my experience, and which I assume is happening in the experiences of many of you, is more significant of the newer role the engineer can legitimately play today.

This newer role, of which I speak, finds the engineer as a representative of the sales department—in our business, for example, as a specialist in the development of lubricating products for all types and kinds of special uses, in the correct selection and application of petroleum products, in the demonstration of their superiority, and in closing sales by means of facts, figures, and other engineering evidence.

I call this a new role for the engineer because, not long before I transferred from the engineering and construction work to the marketing and sales technical service activities, engineers were not used a great deal in this type of function. In those days, "oil was oil" and a salesman without any particular background sold the products of his company to a customer whose purchasing agent was also without any particular technical background. Such lubricating and allied problems as existed were not as ramified or as complex as they have since become, and product recommendations of the company were relatively simple and so were the application problems.

The Future

We haven't started to tap the potential of this country. The automobile industry, it seems safe to assume, is just in its infancy. Despite the marvels we have seen in aviation, there are greater things to come. The petroleum industry is producing quality and quantity fuel and lubricants for vehicles of land, air, and sea which are the marvel of the age. Only 3 weeks ago, I listened to your Mr. Kettering give a very illuminating address on a new fuel called triptane which, if and when it can be made practical both in production and application, will make our isooctane and high-octane aviation fuels of today only a stepping stone in the march of progress.

I call your particular attention to the fact that during the postwar period, the ability of technically trained men in industry will be on a higher level because of:

(a) The broadened experience of the engineers who have remained at home and solved the many problems of this war.

(b) The intensified education given an unprecedented number as training for war service.

(c) The practical experience gained by many of these men in the service who will return greatly improved for their war experience.

I call your particular attention to the fact that as the result of all this there will be more trained men filling positions of production superintendents, directors of purchases, purchasing agents, etc., and that these men are going to have more definite ideas as to what product qualities they need and the service and results which the supplier should furnish. More and more, it will require

Program Followed by Standard Oil of

HERE is the outline of the program followed for the past 20 years by the author's company in providing intensified instruction to selected graduate engineers, with and without sales experience. The training courses combine laboratory and theoretical training with practical application in plant, factory, and refinery. The plan involves:

1. The conduction of intensified training schools in the petroleum business in general, with particular emphasis on the manufacture, testing, application, and sale of fuels and lubricants of all types, asphalts, specialties, and byproducts.

2. These schools are conducted from time to time as required and in classes numbering about 30 students, the usual period being approximately 5 months.

3. The student qualifications are:

(a) Graduate engineers, preferably mechanical and chemical, with, if possible, 1 or 2 years of sales experience.

(b) Likely young men with pleasing personalities and with the desire and inclination to work.

4. These schools are conducted at the company's refinery at Whiting, Ind., in a building equipped with complete laboratory, lecture, and demonstrating facilities which also permits drafting personnel from all departments, such as research, development, laboratory, manufacturing, and sales, for lectures and

an engineer to sell an engineer.

President Roosevelt, in his recent report to Congress on the state of the nation, stated that in order to maintain a comparable economy in this country during the postwar period, it would be necessary to provide employment for 60 million people. The largest number previously employed in peace time was in 1929 and 1940, 46 million. Therefore, if we do no better than we did in those two peak years, we will be some 14 million short of the mark.

Unless we are careful, it might be all too easy to fall once more into the belief that our horizons are limited. It might be all too easy to feel that our plant capacity can't be used, that we can't supply the millions of jobs that will be needed to maintain and raise our standards of living, that we can't expand the economic horizons of our country. Already there are people who, looking at our enormous production facilities, are beginning to moan and to prophesy darkly about the problems that lie ahead, hinting that we can't advance any further. They figure that the war may drive us into bankruptcy, that we're going to have the most horrible depression.

Providing the Jobs

How are we going to provide these 60 million jobs? It is one thing to talk about 60 million jobs, and what a lot of loose talk has been coming out of Washington on this subject, but 60 million jobs can only be reached if products can be produced at prices at which they can be sold, and the products sold.

In my opinion, federal projects are only temporary expedients and can only be regarded in that light and not as the answer to this fundamental problem. The cost of all such government expedients is distributed by taxes and a very large percentage of it borne by industry; whereas, if there is to be any permanent solution to this problem, it will have to come through private enterprise with an entirely different approach.

Private enterprise can and will solve its part of the problem provided it is given an opportunity to do so. It will require:

(a) The lifting or relaxing of extreme tax burdens, such as excess profit taxes.

(b) Accelerated depreciation allowances.

(c) Possibly some postwar refinancing for small industries, in order to permit them to expand, take advantage of new technological improvements, increase production and provide employment of more people.

And how can such a program be initiated and maintained? Let me again emphasize — only by selling the products produced.

We have been spoiled in many essential industries during the war. We have had a sellers' market. With the cessation of hostilities, things will again have to be sold and, more than ever, intelligently sold. Many economists predict extreme competition in many lines, which will place a premium on salesmanship and sales ability.

This subject of salesmanship was given a great deal of consideration at a meeting of the American Management Association marketing conference held at New York City recently. Arthur A. Hood, director of dealer relations for Johns-Manville Sales Corp., is reported to have predicted that 1,500,000 more salesmen will be required during the postwar period than before Pearl Harbor.

Economy in Quality

On the assumption that retail sales volume must double, Don G. Mitchell, vice president of A.M.A.'s marketing division and vice president in charge of sales of Sylvania Electric Products, Inc., is reported to have said that high-priced salesmen mean cheaper distribution. He developed the theory that one $5,000-a-year salesman will outsell two $2,500-a-year salesman with the saving of one expense account.

On any such premise, the engineering salesman should come into his own in a manner never before approached in the history of our industrial development. In fact, he should become a necessity in many industries.

During the postwar period, I predict:

1. The demand for graduate engineers of technical and sales ability will be greatly increased.

2. The prestige of men with engineering training will receive great impetus, and, as a result, such men will move along into positions of greater importance and responsibility at a more rapid rate than ever before.

3. That many industrial concerns, in an effort to develop rapidly capable talent of this character, will initiate, reinstate or extend training courses where selected graduate engineers, with and without sales experience, will receive intensified instruction, combining laboratory and theoretical training, with practical application in plant, factory, refinery, etc.

Conclusion

In the new and improved model of the mechanical age that is surely ahead of us during the postwar period, there will be a greatly increased demand for:

1. War-developed, higher-quality, higher-performance products.

2. War-developed, improved techniques and methods of application.

In addition there must be better educated, better trained personnel to explain and sell both.

Where can we find the men necessary to meet these demands except among the well grounded, well qualified sales engineers, trained in basic engineering, trained in the merits of his company's line of products, trained in the understanding of technical and practical problems of customers? The sales engineer, in my estimation, will certainly be the man of the hour.

Indiana in Providing Technical Training

the coordination of the practical applications under actual operations on a tremendous scale.

The company's experience has been that the graduate engineer, as he leaves his university or engineering college, has very little knowledge of business in general and of the oil business in particular, of fuels, lubricants, or other petroleum specialties, and that it is absolutely necessary to give him intensified training of this character in order that he may quickly begin to build an accurate background and take his proper place in the organization.

Cost of Training

The cost of conducting these later schools, including salaries of the students, has approximated $75,000 each, so that at the conclusion, when these men actually enter the company's employ, the company has an investment in them of $2,500 each.

The company is firmly convinced, however, that this is a very profitable investment. Many of its most capable sales engineers are graduates of these schools and are filling more and more important positions in the organization.

A very large percentage of these men, particularly from the later schools, have entered the various military services and are on military leaves. With their return, it is anticipated that the company will still have in its employ from 50 to 60 per cent of the original enrollment over this 20-year period.

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"YOU CAN'T BUY MORE DEPENDABLE BRANDS"

Computation of Volume Factors for Liquids

*by Park J. Jones**

Mechanics of Producing Oil, Condensate, and Natural Gas

PART 16 OF A SERIES

Volume factors are obtained from experimental data on either surface or subsurface samples. If these are not available, a volume factor may be estimated by one of the methods considered in this article. A study of the methods will bring out their limitations relative to experimental methods of determining volume factors for reservoir liquids. The methods are limited to reservoir liquids at, or near, saturation pressure.

Example 1

TABLE 16-1 illustrates a computation of the volume factor for the following conditions:

Gas-oil ratio = 800 cu. ft./bbl.
Gravity of oil = 39.3° A.P.I.
Specific gravity of oil = 0.8285.
Weight of oil = 290.0 lb./bbl.
Reservoir temperature = 150° F.
Reservoir pressure = 2,600 p.s.i.a.

GAS ANALYSIS

Constituent—	Volume (per cent)
Methane	76.00
Ethane	10.00
Propane	7.00
Butanes	5.00
Pentanes	1.50
Hexanes+	0.50
	100.00

The estimated volume factor for this example is 1.39 bbl. of space per barrel of oil.

Example 2

Table 16-2 illustrates a computation of the volume factor for the following conditions:

Constituent—	Weight (per cent)	Plant recovery (per cent)
Methane	12.00	...
Ethane	4.00	...
Propane	6.00	30
Butanes	8.00	80
Pentanes	6.00	100
Hexanes	6.00	100
Heptanes+	58.00	100
	100.00	

Reservoir pressure = 3,000 p.s.i.a.
Reservoir temperature = 160° F.
Specific gravity of heptanes+ = 0.800.

TABLE 16-1—ILLUSTRATING COMPUTATION OF VOLUME FACTOR FOR OIL

Constituent—	Cu. ft. per bbl. oil	Lb./M.c.f.	Lb.	Cu. ft. liq./lb.	Cu. ft. liquid
Methane	608.0	42	25.6	.054	1.382
Ethane	80.0	79	6.3	.042	0.264
Propane	56.0	116	6.5	.032	0.208
Butanes	40.0	153	6.1	.028	0.171
Pentanes	12.0	190	2.3	.026	0.060
Hexanes+	4.0	227	0.9	.024	0.022
Oil	5.615	...	290.0	...	5.615
Total			337.7		7.722
Propane+			305.8		6.076
Ethane+			312.1		6.340

$$\text{Density of propane+} = \frac{305.8}{6.076} = 50.3 \text{ lb./cu. ft.; sp. gr.} = \frac{50.3}{62.34} = 0.806$$

$$\text{Weight per cent ethane in ethane+} = \frac{6.3}{312.1} = 2.02$$

$$\text{Weight per cent methane in composite} = \frac{25.6}{337.7} = 7.6$$

From Fig. 16-1: Using 0.806 and 2.02, sp. gr. of ethane+ = 0.786
From Fig. 16.2: Using 0.786 and 7.6 and 7.6% methane, sp. gr. = 0.720
From Fig. 16-3: Using 0.720 and 2,600 p.s.i.a., add 0.015; sp. gr. = 0.735
From Fig. 16-4: Using 0.735 and 150° F., subtract 0.041; sp. gr. = 0.694

Density of reservoir liquid = 62.34 (0.694) = 43.1 lb./cu. ft.
Volume of reservoir liquid = 337.7/43.1 = 7.84 cu. ft./bbl. oil
Estimated volume factor = 7.84/5.615 = 1.39 bbl. space/bbl. oil

*Production consultant, Houston.

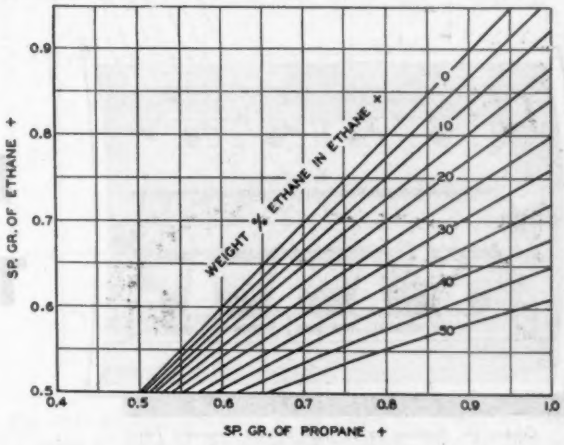

Fig. 16-1—Specific gravity of ethane+ vs. specific gravity of propane+ and weight per cent of ethane in ethane+. Data by Standing and Katz

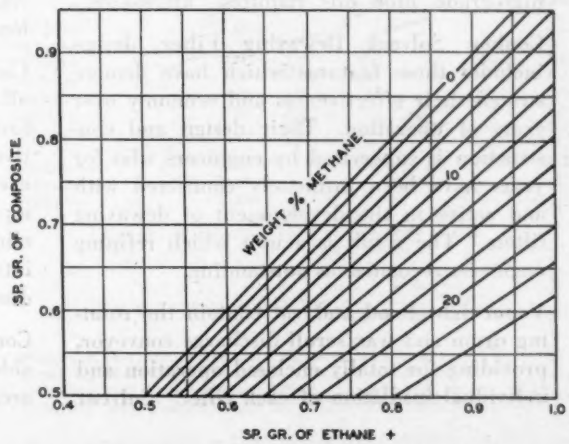

Fig. 16-2—Specific gravity of composite vs. specific gravity of ethane+ and weight per cent methane in composite. Data by Standing and Katz

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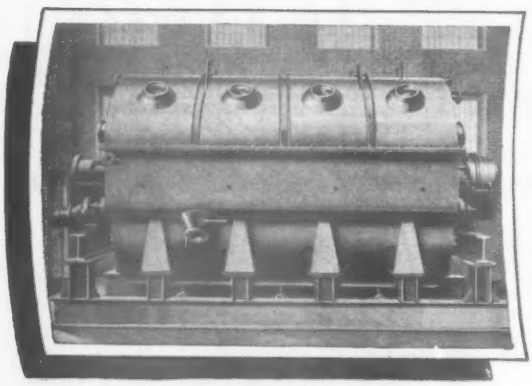
CONKEY DEWAXING FILTERS GIVE ECONOMICAL, TROUBLE-FREE OPERATION



Conkey 10' diameter by 16' face Solvent Dewaxing Filter.

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Conkey Solvent Dewaxing Filters are available in standard drum sizes for nominal filter areas of 50 to 500 square feet.

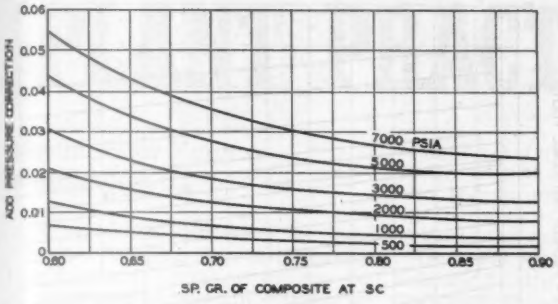

Fig. 16-3—Pressure correction to be added vs. specific gravity of composite at standard conditions and pressure. Data by Standing and Katz

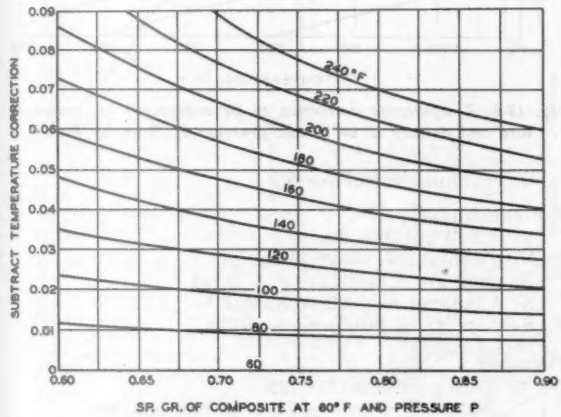

Fig. 16-4—Temperature correction to be subtracted vs. specific gravity of composite at 60°F. and pressure P and temperature. Data by Standing and Katz

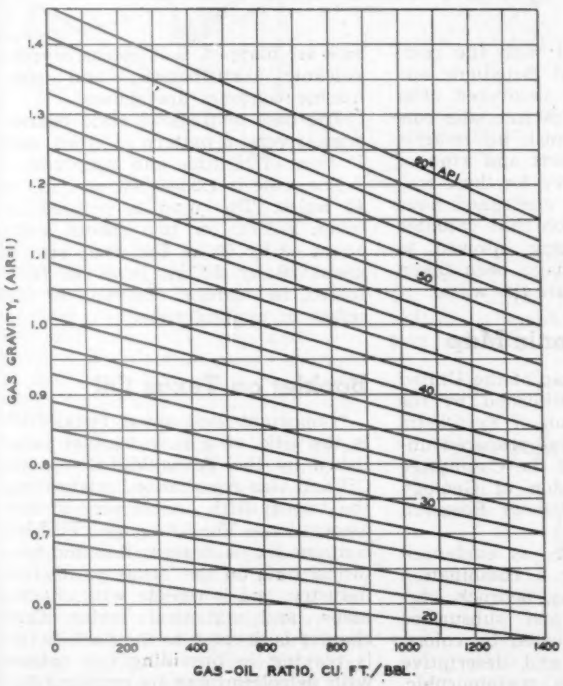

Fig. 16-5—Gas gravity vs. gas-oil ratio and °A.P.I. Data by Katz

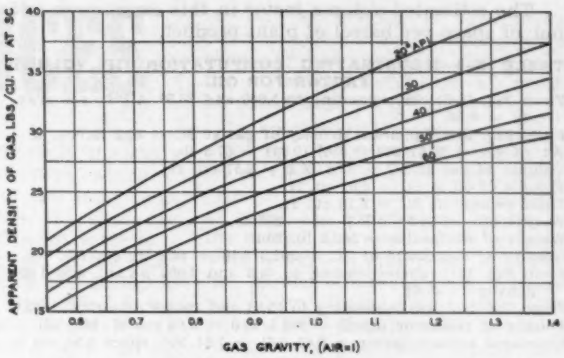

Fig. 16-6—Apparent density of a gas at standard conditions vs. gas gravity and °A.P.I. Data by Katz

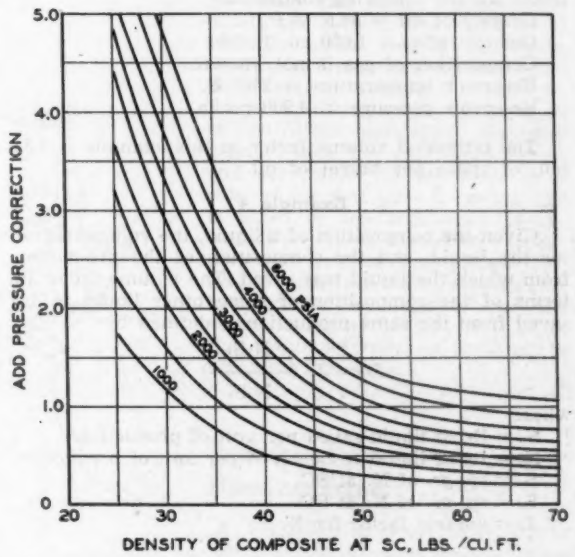

Fig. 16-7—Pressure correction to be added vs. density of composite at standard conditions and pressure. Data by Katz

TABLE 16-2—ILLUSTRATING COMPUTATION OF VOLUME FACTOR FOR PLANT PRODUCT

Constituent—	Weight (%)	Cu. ft. per 100 lb.	Cu. ft.	Plant data — Rec. (%)	Plant data — Cu. ft.	Plant data — Lb.
Methane	12.00	...	...	...	...	...
Ethane	4.00	...	...	...	...	...
Propane	6.00	3.15	.189	30	.0567	1.8
Butanes	8.00	2.80	.224	80	.1792	6.4
Pentanes	6.00	2.55	.153	100	.1530	6.0
Hexanes	6.00	2.42	.145	100	.1450	6.0
Heptanes+	58.00	2.00	1.160	100	1.1600	58.0
Methane+	100.00		1.871		1.6939	78.2
Ethane+	88.00					
Propane+	84.00					

$$\text{Sp. gr. of propane+} = \frac{84}{1.871\ (62.34)} = 0.72$$

$$\text{Wt. per cent ethane in ethane+} = \frac{4}{88} = 4.55$$

From Fig. 16-1: Using 0.72 and 4.55, sp. gr. of ethane+ = 0.70
From Fig. 16-2: Using 0.70 and 12, sp. gr. of composite = 0.60
From Fig. 16-3: Using 0.60 and 3,000 p.s.i.a., add 0.03; sp. gr. = 0.63
From Fig. 16-4: Using 0.63 and 160° F., subtract 0.056; sp. gr. = 0.574

Sp. gr. plant product = 78.2/1.6939 (62.34) = 0.740

$$\text{Est. volume factor} = \frac{0.740}{0.574\ (0.782)} = 1.65 \text{ bbl. space/bbl. product}$$

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The estimated volume factor in this example is 1.65 bbl. of space per barrel of plant product.

TABLE 16-3—ILLUSTRATING COMPUTATION OF VOLUME FACTOR FOR OIL

From Fig. 16-5; corresponding to 1,050 and 36.5° A.P.I., gas gravity = 0.84
From Fig. 16-6; apparent density of gas at SC = 26.2 lb./cu. ft.
Wt. of gas = 28.97/379 (1,050) (0.84) = 67.5 lb.
Volume of gas at SC = 67.5/26.2 = 2.57 cu. ft.
Volume of oil at SC = 5.61 cu. ft.
Total volume at SC = 8.18 cu. ft.
Weight/bbl. of 36.5° A.P.I. oil = 295 lb.
Weight of composite = 362.5 lb./bbl.
Density of composite at SC = 362.5/8.18 = 44.3 lb./cu. ft.
From Fig. 16-7; corresponding to 44.3 and 4,900 p.s.i.a., add 1.65; density = 45.93
From Fig. 16-8; corresponding to 45.93 and 200° F., density = 42.0
Volume of reservoir liquid = 362.5/42.0 = 8.64 cu. ft./bbl. oil
Estimated volume factor = 8.64/5.61 = 1.54 bbl. space/bbl. oil

Example 3

Table 16-3 illustrates a computation of the volume factor for the following conditions:

Gravity of oil = 36.5° A.P.I.
Gas-oil ratio = 1,050 cu. ft./bbl.
Composition of gas is not known.
Reservoir temperature = 200° F.
Reservoir pressure = 4,900 p.s.i.a.

The estimated volume factor in this example is 1.54 bbl. of space per barrel of oil.

Example 4

Given the composition of a liquid, the volume factor for the liquid, and the composition of the production from which the liquid was saved. The volume factor in terms of the composition of some other liquid to be saved from the same production is defined by:

$$J_x = J_1 \left(\frac{N_1 S_x}{N_x S_1}\right)$$

where

N_1 = lb. of liquid saved per unit of production
N_x = lb. of liquid to be saved per unit of production
S_1 = sp. gr. of N_1 at SC
S_x = sp. gr. of N_x at SC
J_1 = volume factor for N_1

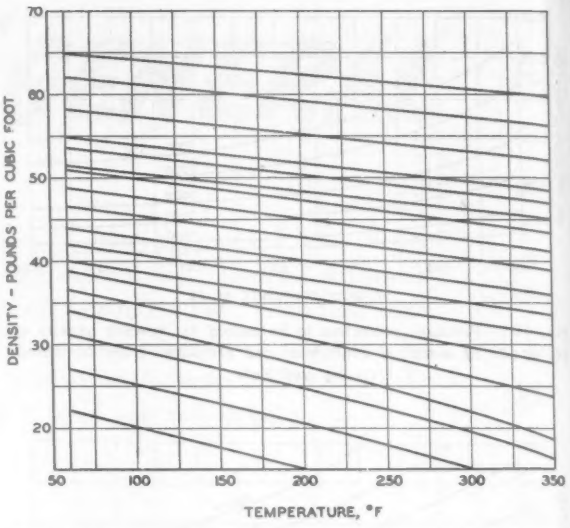


Fig. 16-8—Temperature correction to be subtracted vs. temperature and density at 60°F. and pressure P. Data by Katz

J_x = volume factor for N_x

For example:

J_1 = 2.19 bbl./bbl. for
N_1 = pentanes+ = 66.19 weight %
S_1 = sp. gr. of pentanes+ = 0.743
N_x = butanes+ = 72.42 weight %
S_x = sp. gr. of butanes+ = 0.725

Therefore:

$$J_x = 2.19 \frac{0.6619\ (0.725)}{0.7242\ (0.743)} = 1.96 \text{ bbl./bbl.}$$

References

1. Katz, D. L., Prediction of the Shrinkage of Crude Oils Paper presented at the A.P.I. Chicago meeting, Nov. 1942.
2. Standing and Katz, A.I.M.E., TP No. 1397.

Analysis of Butadiene And Styrene by Mass Spectrometry

A mass spectrometer, developed by Consolidated Engineering Corp., which was recently installed at the National Bureau of Standards, is being employed by A. Keith Brewer in analyses of liquid and gaseous materials for making synthetic rubber, according to an item in Technical News Bulletin, published by the bureau. This is an elaborate and highly specialized instrument that makes possible a quick, complete, and accurate analysis of samples of butadiene, styrene, and other monomers submitted by plant operators through Rubber Reserve Co.

Since many of the constituents are closely related hydrocarbons, the analyses of conventional methods would be impossible, or at least would involve considerable research on the method to be applied to each constituent. Studies are likewise being made of the purity of butadiene and styrene produced in different plants and by different methods. Other projects deal with the composition of recycled butadiene and styrene, which are recovered after polymerization for use in a later run.

Such studies furnish information regarding the amount and kind of purification necessary for these materials. Analyses of vent gases have led to the conclusion that valuable materials were being allowed to escape, and steps have been taken to reduce or eliminate the waste.

New U. S. Tectonic Map

A new tectonic map of the United States has been published by the American Association of Petroleum Geologists, which was prepared under the direction of the Committee on Tectonics, Division of Geology and Geography, National Research Council.

Geologic structure, as evidenced and interpreted by a combination of outcropping areas, bedrock, surface disturbance, and subsurface deformation, is indicated by colors, symbols, contours, and descriptive explanation. Igneous, metamorphic, and selected areas of sedimentary rock are mapped. Salt domes, cryptovolcanic disturbances, and submarine contours are shown.

The base map shows state boundaries, rivers, a pattern of cities, and 1° lines of latitude and longitude.

The scale is 1:2,500,000, or 1 in. = 40 miles. The map is printed in seven colors, on two sheets, each about 40 by 50 in. Full map size is about 80 by 50 in. Price is $1.75 folded in manila envelop, or $2 rolled in mailing tube.

Booklet on Texas Oil

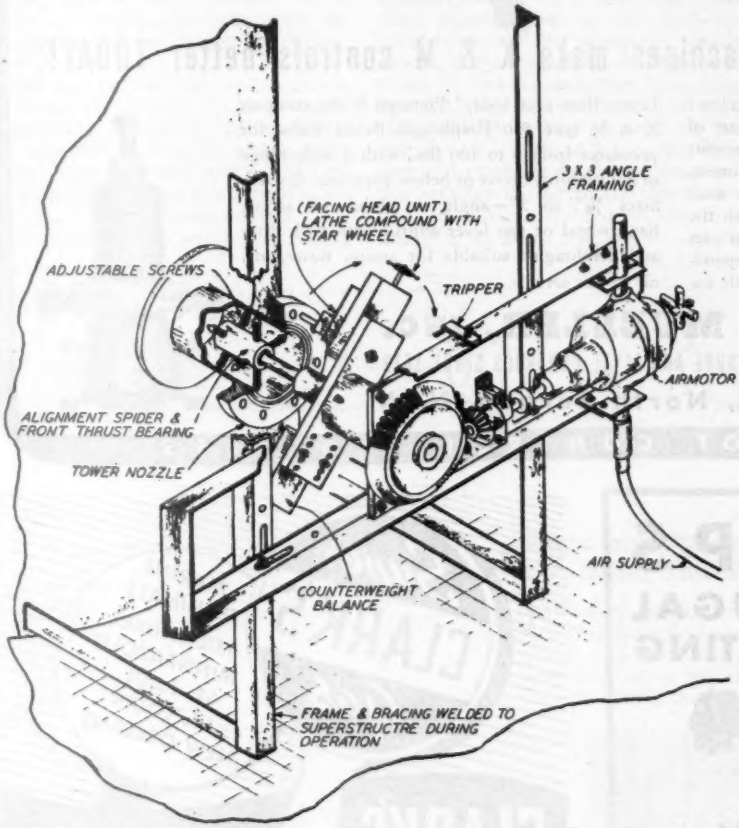
"Important facts about Texas Oil" is the title of a new booklet published by the Texas Mid-Continent Oil and Gas Association, celebrating the twenty-fifth anniversary of the association. The 64-page booklet contains factual information and historical data on the Texas petroleum industry, and is replete with charts, maps, and statistical tables. One chapter is devoted to the part Texas is playing in providing the nation with petroleum and its products for the needs of war.

PLANT PRACTICES

Machine for Facing Tower Nozzles

AN apparatus developed by Sinclair Refining Co. really constitutes a portable lathe which may be taken to and installed in a nozzle or manway for the purpose of machining to dimensions the face of the nozzle which has been rebuilt with weld metal to fit the cover gasket and avoid leaks. It is made up of a rotating shaft made from a 5-in. o.d. still tube 6 ft. long and with ½-in. wall; this shaft passes through an old pump liner about 24 in. long which serves as a journal, rigid with the shaft. This liner or journal, in turn, rotates in a sleeve, bearing or "spider", a section of pipe some 24 in. long and approximately 12 in. in internal diameter to fit with sufficient snugness around the old liner journal. This spider is provided at each end with a set of four "legs" each with a short section of 2 in. or so turned at right angles to the leg and fitted with a heavy setscrew. A sleeve or bearing rides freely on the extended power of this shaft and is provided with similar arms for centering rigidly the shaft in the nozzle or manway which is also the purpose of the other legs on the main spider. Oil cups are fitted to the spider to lubricate it.

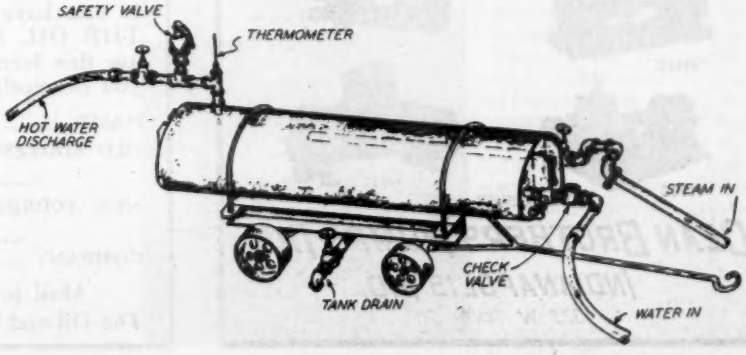
Over the cutting end of the shaft a facing head is fitted and bolted to the liner journal, the head being cut from 2-in. plate, about 3½ ft. long in the form of a very flat ellipse. On the dead end a counterweight is bolted to balance the head. On the cutting end a tool head is bolted, in which typical lathe cutting tools may be clamped. The center hub or bearing of this facing head is extended by welding on a sleeve or hub extension fitted over the main shaft with over-all depth of about 8 in.



In operating this facing machine a 3-5-hp. electric motor is mounted on suitable rack, supported on any type of base which holds its shaft at about the longitudinal center of the nozzle; the motor shaft is fitted with a loose coupling for engaging the inside bolt extending through the hollow main cutter shaft. The power end of this main shaft is mounted in a suitable location followed by the remainder of the assembly. The legs of the spiders are adjusted by the setscrews to hold the shaft and cutter rigid in the nozzle center with the facing head near the gasket face of the nozzle, which has been built up with surplus metal by welding or otherwise. The free-floating spider on the power end of the main shaft is slipped back to near the end of that shaft and set rigidly in the shell as a support for that end. A cutting tool is fitted to the tool head, is extended to cut the nozzel face as desired and the machine started. Cutting is continued until a smooth gasket surface is obtained, and the whole assembly is removed. More than one tool may be required in finishing this work.

Portable Water Heating Tank

A PRESSURE vessel 18 in. by 12 ft. is mounted on wheels. Lines for inletting water and steam separately are attached to the vessel and both are introduced simultaneously to obtain a mixture at the desired 200° F. temperature and at about 100 p.s.i. A 1⅛-in. fire-hose nozzle is attached to a hose connected to the water vessel. Workmen direct the heated stream against the tank walls in the conventional manner to loosen and wash down the encrusting matter, which is washed or pumped from the tank floor. A pressure gage may be fitted to the vessel.



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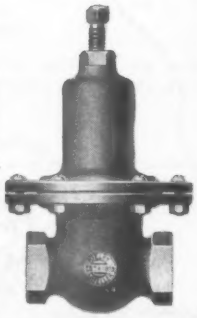

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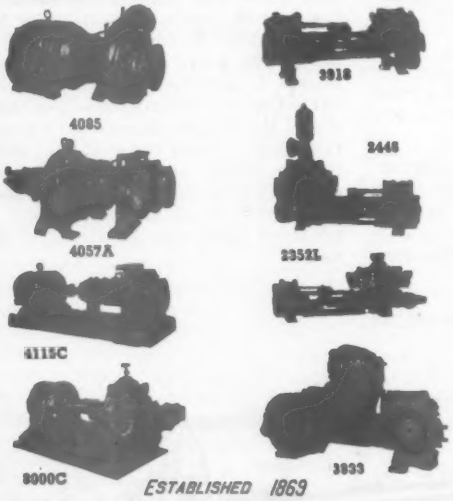

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Pivoted-Type Hose Rack

WHEN removing the longer lengths of fire steam hose from the ordinary rack, considerable time is often lost in straightening out the kinks in the hurriedly removed hose. Shell Oil Co., Inc., has installed the swivel-type nozzle, illustrated in Fig. 1, on all of the fire-hose stations in its East Cromwell, Okla., gasoline plant, along with the pivoted-type hose rack shown. Of welded construction, the rack is arranged to rotate through approximately 270°, thereby adjusting its position to any angle within three-fourths of a circle in which the hose may be removed without danger of excessive kinking.

The top part of the rack is made of ⅛-in. or heavier by 8 to 10-in. wide plate formed to 24-in. radius arc about 56 in. long to which eight ½-in. diameter bars are welded ¾ in. from the edge of the curved plate on radial lines of 8-in. centers.

Centered on the width and length of the curved plate a 2½-in. length of plain-end 15-in. pipe is welded on the inside of the plate. A ¼-in. by 1-in. bar, which has a bent offset at the center of its length parallel to its 1-in. width, is welded on the curved plate, forming the chord of the circular segment of which the curved plate becomes the arc. The bent offset at the center of the ¼-in. by 1-in. bar should be formed to a 1⅜-in. diameter so that sufficient clearance will be allowed over the 1-in. pipe upon which the bar will bear. Another length of bar about 6 in. long is also formed to the same dimensions as the longer bar, then both pieces lined up and a $\frac{7}{16}$-in. hole drilled in the assembly which results in a bearing cap arrangement when bolted around the 1-in. pipe upright. Any desired length of 1-in. pipe over 18 in. may be used for the upright. A length of 2-in. pipe with one end closed is used as a supporting arm for the particular assembly. The upright is welded to the arm about 5 in. from the closed end of the arm. Attachment of the arm to a support may be either by welding or by bolting when a flange is made up on the attachment end of the arm. The unit is assembled by placing the upright into the 1¼-in. pipe which is attached to the curved plate and bolting the bearing over the 1-in. pipe upright.

Fig. 2

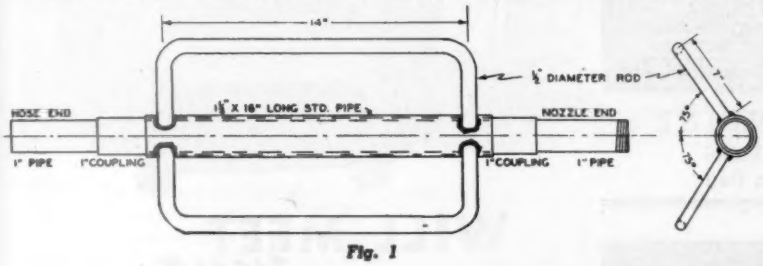
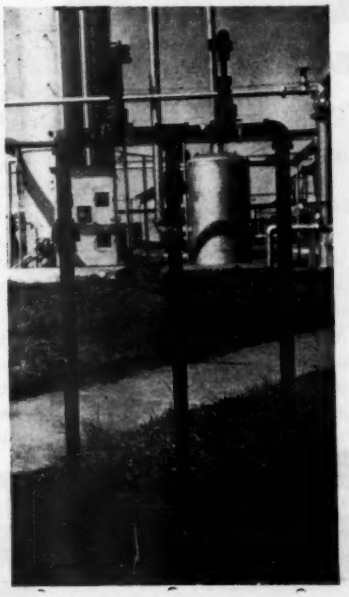
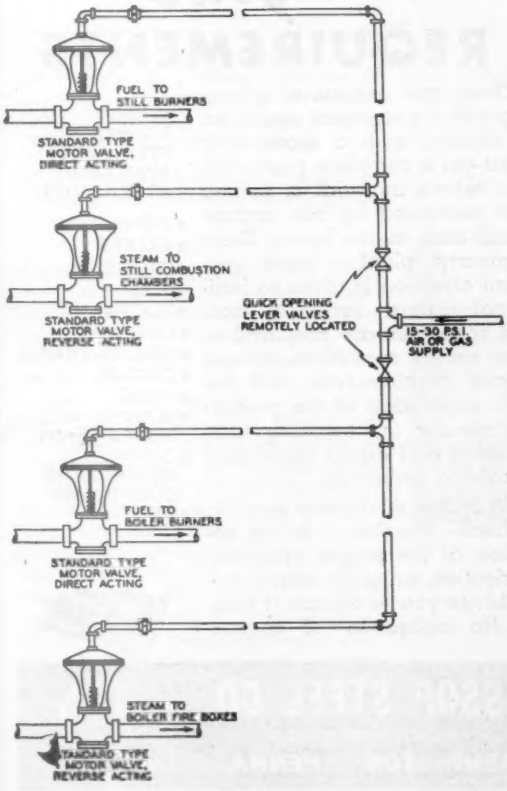


Fig. 1

Remotely Operated Flame Snuffer For Boiler and Still Fire Boxes

UNIQUE among the many safety measures carried out at Phillips Petroleum Co.'s Wewoka, Okla., natural-gasoline plant is a method for quenching the fires under the boilers and stills when required by emergencies. Located at different points within the plant several control stations, like the one illustrated in the photograph, are arranged to shut off the fuel supply and admit low-pressure steam to the fire boxes simultaneously by lifting the lever of a quick-opening valve. Shown diagrammatically in the sketch is the hookup for single-station control. As many control points as desired may be made by connecting all stations in parallel. For the particular installation at the Phillips plant, low-pressure gas is used in the hookup for operating the diaphragm valves. Standard motor valves and an ordinary type of quick-opening lever valve are used in the installation.

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15-30 P.S.I. AIR OR GAS SUPPLY
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Portable Rotary Drill Cuts Giant Cores

by Kenneth B. Barnes

IN Central Texas a small standard-type oil-country core-drilling rig is being used to obtain cores which are 2½ to 3 ft. in diameter. Each separate core weighs approximately 1 ton. This unique work is part of a new method of investigating, prior to excavating, the nature and thickness of rocks underlying dam and bridge sites. It is being done by the U.S. Army Engineers of the Galveston district.

The method possibly may have some future application in shallow oil mining, and in refinery and pipeline construction where knowledge of rock character and thickness may be necessary in excavating or planning structural support for heavy equipment, or even in the simple necessity of drilling shallow, large-diameter holes for various purposes.

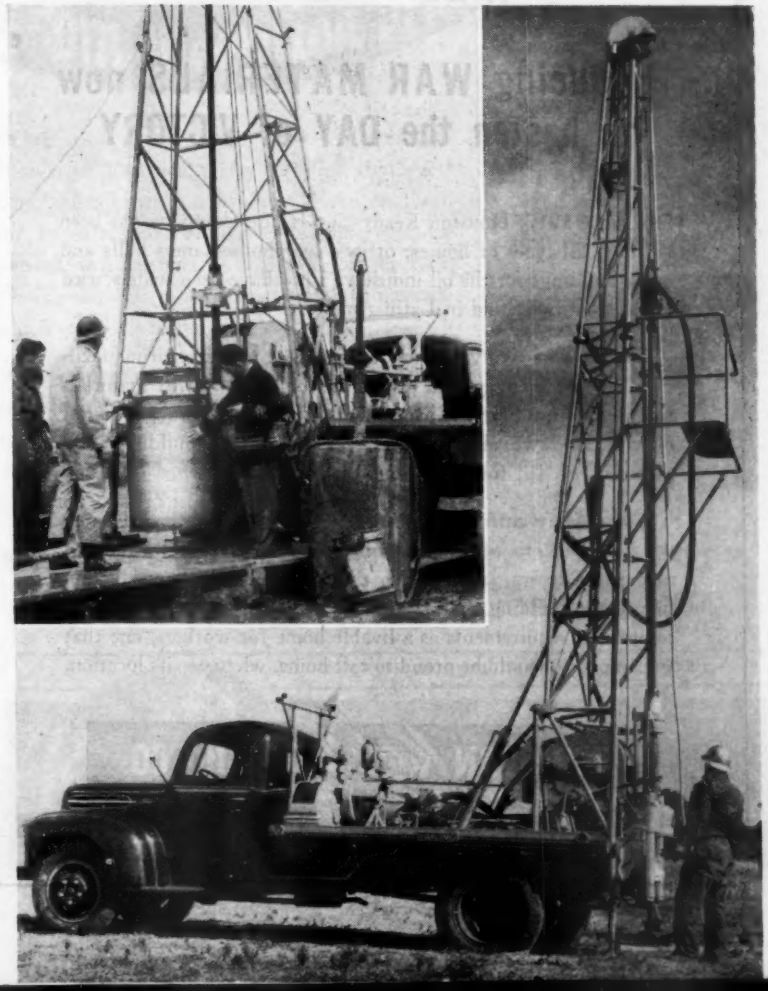
The operations are of unusual interest in the strong contrasts provided to routine oil-field drilling and coring procedures. For example, in the large core-hole work, one of the driller's duties is to go to the bottom of the hole every few feet to perform certain operations. He is lowered down the hole to bottom on a swing from the draw works, where he wedges off the core which previously has been cut, and fastens it into equipment for removal to the surface. On the trip up, with the aid of an electric light, he makes an inspection and record of the walls of the hole corresponding to the core.

The activity is part of a preliminary survey by the engineers for flood-control dams projected in Central Texas. At Coleman, a series of the large holes was drilled to a depth of 78 ft., and the 28-in. cores lined up on the surface for inspection and further examination by the excavating contractors. The holes here are on the location of a dam to be built across Hords Creek, in the Colorado River basin, approximately 10 miles west of the city. The dam will be part of a large flood-control project, and also will furnish a new water supply to Coleman.

Fig. 1—(Above) View of giant-sized cores from an investigative hole near Hillsboro, Tex. Each core is 3 to 4 ft. in length, weighs from 1,500 to 2,500 lb., and is 28 in. in diameter

Fig. 2—(Inset, right) Details of special equipment used. A large-sized core has just been pulled, is shown suspended in the retriever. Core barrel is in lower right. A. M. Hull, geologist, is standing at right. J. D. Bland is engineering assistant

Fig. 3—(Bottom) Side view of Failing 1,500 rig used in the coring work, showing standard equipment



Earlier Core Work With Drill

Similar work has just been completed in Hillsboro, Tex., where three large-diameter holes were drilled on a dam site which will make a lake and form the location for a hydroelectric unit. These comprise one part of the Brazos River flood-control program. The deepest hole at Hillsboro was 138 ft.; all were 28 in. in diameter.

The drilling unit employed is a standard 1500 series rig manufactured by George E. Failing Supply

Co. The core barrel used is a large tubular steel unit with slits in the end.

The barrel is attached to the regular drill stem and rotated in the usual manner. Steel shot periodically is fed into the hole to furnish the cutting medium.

When sufficient drilling has been done to equal the length of the barrel, the drill stem and core tube are pulled to the surface. A driller subsequently is sent down the hole on an elevator seat, and with a wedge the core is broken loose from the rock formation below. The circular core retriever is slipped over the upper portion of the core and the core is locked thereto with a number of steel wedges (see Fig. 2). One core usually is cut during each tour.

The next job will be in the vicinity of San Angelo, where the same rig will be used but the size of the core holes will be increased to 36 in. in diameter.

Although calyx drilling is not new in the mining industry, where large core holes have been drilled for various purposes, the Texas work is one of the first instances where drilling and coring of such size has been done so successfully with such a small and portable-type rig as the one being used.

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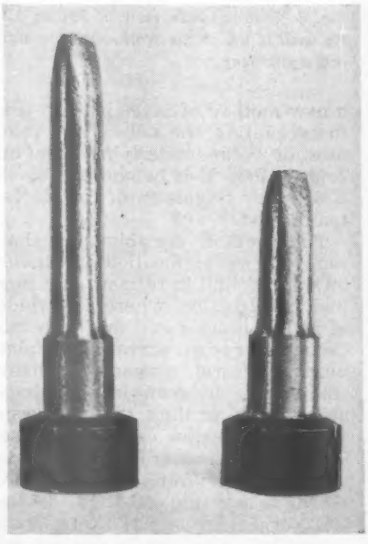
Control Method for Welding Alloy Steel

TOOLED to fabricate special pipe bends, headers and the like, of carbon steel and of the various alloy piping materials, Southwest Piping & Fabricating Co., Tulsa, recently completed a special section of pipe for one of the catalytic crackers in the Mid-Continent area.

Made of 11-13 Cr plates the entire section is arc-welded according to code procedures as set up for carbon steels. All welders were qualified under standard methods for the particular weld procedure as set up for ½-in. and 1-in. plate thickness. Qualification tests for the different plate thicknesses included horizontal, inclined and vertical positions for preheat work which was carried out at 450°-500° F. temperatures. In order to maintain close control over the operators' work during the welding of the pressure parts of the pipe section, the welding supervision for the job intermittently tested each operator's work by having the previously qualified operator prepare a small test coupon from which a standard all-weld metal 0.505 tension test bar was made for immediate testing.

Typical of the bars tested under this procedure is that shown in the accompanying photograph. This particular specimen represents an average in both appearance and in physical properties for the group of intermittent welder tests made for the job.

Physical properties, after heat treatment, for all weld test bars average 50,200 p.s.i. yield strength,



Typical 11-13 Cr all weld, test bar taken from a test-weld seam in Allegheny metal 12

76,700 ultimate and 30-31 per cent elongation in 2-in. The plate material, Allegheny metal 12, runs from 50,000 to 58,000 p.s.i. for yield, from 72,700 to 81,500 p.s.i. tensile, and from 34 to 41 per cent elongation in 2-in.

Electrodes used on the job were A. O. Smith Corp.'s ⅛-in. SW 153 which, after heat treatment at 1,200° F., show typical physical properties of 59,500 p.s.i. yield, 76,300 p.s.i. tensile and 22 per cent elongation in 2-in.

Made for Jones & Laughlin Supply Co. for installation, the special pipe section resembles an ordinary Y lateral. The later run, made of 1-in. plate rolled to 24-in. o.d., is nearly 11 ft. long with one end reduced to 12-in. pipe size by means of a 10-in. conical section interposed between the 24-in. o.d. section and the 12-in. terminal flange. Centered on the length of the run the branch is 27½-in. o.d., slightly over 5 ft. long and is made of rolled 1-in. plate with an 8-in. nozzle connection located near the junction of the branch and lateral. The complete assembly includes flanges and various stiffeners and supporting attachments.

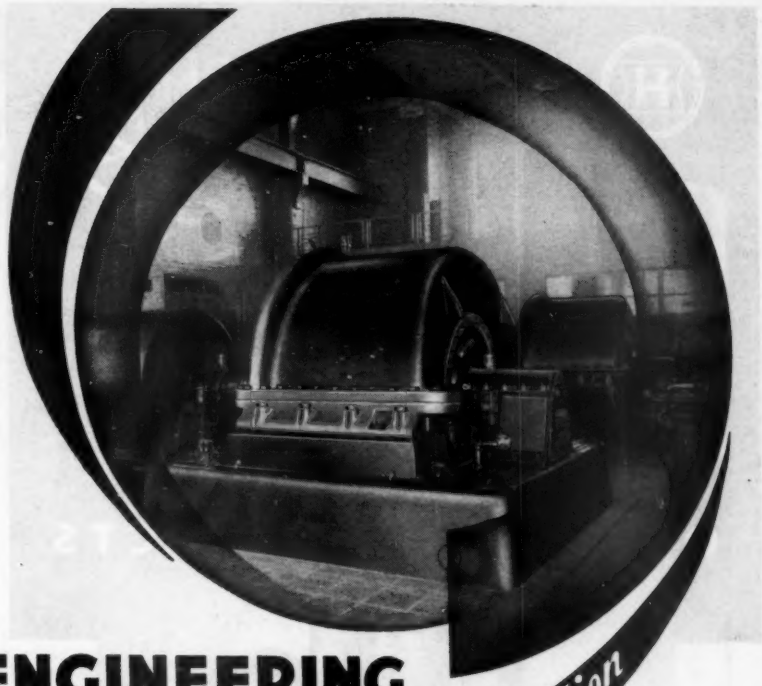
Loose-ring-type flanges having the gasket bearing surface fabricated of 11-13 per cent Cr and the backup ring of carbon steel are used for all flange connections on the section.

With most of the machine work and forming handled elsewhere all fitup and welding were carried out by Southwest Piping & Fabricating.

National Standards

Establishment of an agency to develop standards for all types of industrial activity and products, an agency in which industry will take a strong leadership but which will cooperate fully with the national Government, has been recommended by a committee of eight industrial business and educational leaders headed by General Electric president, Charles E. Wilson. The committee was selected by the Secretary of Commerce to advise that department and the American Standards Association on plans for the future in development of national standards work.

Rapid growth of standards activities and the need for and use of generally recognized standards has made it important that top management give attention to this matter and to provide for its orderly development. The National Bureau of Standards can increase its usefulness to the nation and to industry by broadening its efforts in its work on fundamental standards and in developing data needed in standardization work, says the committee.



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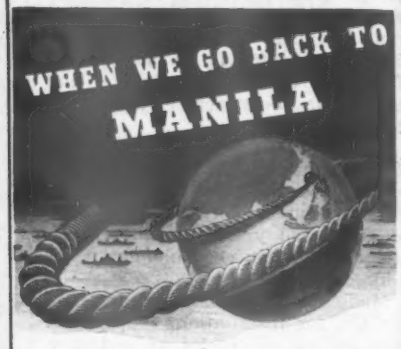
WHEN WE GO BACK TO MANILA



Victories in the Philippines herald the return of manila hemp, but—it will be some time after complete military reconquest that sufficient quantities of manila hemp will be available to handle all requirements.

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QUESTIONS on TECHNOLOGY

by W. L. Nelson
Consulting Engineer

High Octane by Regular Refining

Isn't there some way we can make high-octane gasoline by regular refining so that we don't have to buy a catalytic-cracking plant? It seems that lots of cracking would help and maybe we could desulfurize. Our crude oil is mixed base but has good octane gasoline.—B. L. B.

Refiners with naphthene or asphalt-base crude oils should have little trouble making octane number and there is a good chance that superior octane intermediate-base crude oils can get along for 10 years or so without catalytic cracking. Nevertheless, the cost of catalytic cracking will probably go down sharply and in that event there will be no reason to do without it.

The kinds of stocks that can be made by regular refining methods are shown in Table 1. It will be noted that octane numbers of 70-90 can be made from the various stocks by the use of 4 cc. of tetraethyl lead and even over 100 with commercial isopentane. Such an amount of lead has not been used in the past because octane number did not command a sufficiently high price. Now that high octane number is in demand, and if catalytic plants continue to be costly, the use of 4 cc. may be justified. This will involve about 0.8 cent per gallon whereas catalytic cracking involves a cost of this same magnitude or greater as well as a large investment cost.

Although refiners are generally familiar with the production of the stocks listed in Table 1, most refiners would need additional equipment, among which might be:

1. Topping tower for 300-end-point straightrun gasoline with a hot-oil exchanger or furnace for reboiling.

2. Catalytic desulfurizer which with adequate stabilization would eliminate the need for reboiling in connection with item (1) just above.

3. Additional reforming capacity—enough so that all straightrun naphtha is reformed.

4. Possibly additional polymerization capacity to care for the extra cracking.

5. Possibly a deisopentanizer if the straightrun gasoline has a very poor octane number.

All of the above equipments are inexpensive with the exception of reforming and even this equipment would not require much expenditure if it were only an expansion of already existing reforming facilities.

As an example of what a refiner of intermediate base 37 A.P.I. crude oil might do, Table 2 shows approximate yields of gasoline stocks.

The 53 per cent worth of gasoline might be assembled as shown

TABLE 1—APPROXIMATE A.S.T.M. OCTANE NUMBERS OF REFINERY STOCKS WITH TEL

	Clear	1 cc. TEL	2 cc. TEL	3 cc. TEL	4 cc. TEL
300-end-point straightrun:					
Paraffin base	48	58	64	67	70
Paraffin intermediate base	53	63	68	72	74
Intermediate base	62	71	76	79	81
Naphthene base	71	80	84	86	88
Desulfurized 300-end-point straightrun:					
Paraffin base	(49)	59	65	69	72
Paraffin intermediate base	(54)	65	70	73	76
Intermediate base	(63)	73	78	81	83
Naphthene base	(71)	82	86	88	90
14-lb. natural gasoline:					
Low octane	61	71	76	79	81
Regular octane	66	76	80	83	85
High octane	69	78	83	85	87
Desulfurized 14-lb. natural gasoline:					
Low octane	(62)	72	78	81	83
Regular octane	(67)	78	83	86	88
High octane	(70)	80	85	87	89
Isopentane (commercial)	88	94	104	106	108
Cracked gasoline (thermal):					
Low octane	63	70	73	75	76
High octane	68	74	77	79	80
Reformed gasoline (thermal):					
Low octane	65	71	74	76	77
High octane	76	80	82	83	83½
Polymer gasoline	75	78	80		81
Codimer	86	88	89		90

Parenthesis means doubtful.

TABLE 2

	Per cent on crude	Octane number—Clear	Octane number—4 cc. TEL
Straightrun—desulfurized	15	63	82
Cracked gasoline	23	66	78
Reformed naphtha	12	72	81
Polymerized gasoline	3	75	81
All gasoline	53	65-67	81-82
Kerosene and diesel	22	..	..
Cracked fuel (7 A.P.I.)	18	..	..
Loss	7	..	..
Crude oil	100		
Desulfurized natural	5	67	88

TABLE 3

Premium grade—	Per cent	Per cent on crude	Oct. No.
Desulfurized straightrun	38	5	83 (4 cc.)
Reformed	39	5	81
Desulfurized natural	23	3	88
	100	13	83 (4 cc.)
Regular grade:			
Desulfurized straightrun	32	10	73 (1 cc.)
Reformed	23	7	76
Cracked	32	10	72
Desulfurized natural	3	1	78
Poly	10	3	78
	100	31	74 (1 cc.)
Third grade:			
Cracked	93	13	65
Desulfurized natural	7	1	66
	100	14	65 (clear)

in Table 3 for the sale of three grades of gasoline.

Obviously all sorts of blending proportions are possible including saving out some straightrun naphtha for making third-grade gasoline. If difficulty is encountered in attaining 81 to 84 with the premium grade, the straightrun gasoline can be robbed of isopentane which can then be blended with the cracked or reformed gasoline.

BOOKS

PRACTICAL DESIGN FOR ARC WELDING. Vol. 2. By Robert E. Kinkead. Published by Hobart Brothers Co., Troy, Ohio. $3.50.

Taking up where the first volume left off, this second volume presents 100 new idea stimulators for use by designers, engineers, and fabricators who are interested in making the most of welding equipment now on hand or to be installed. In selecting the design ideas for this second book, the author has paid considerable attention to fabrication of tubular members and connections. Many of these ideas will be found applicable both to piping installations and to tubular structural design.

AMERICAN MALLEABLE IRON—A HANDBOOK. Published by Malleable Founders' Society, Cleveland. 367 pp.

An effort has been made in this volume to reconcile the divergent theories and practices which invariably exist in any metallurgical art. The book is intended for the use of students, teachers, engineers, metallurgists, customers, government agencies, the Army and Navy, and others interested in the subject.

W. F. Cloud, professor of petroleum engineering at University of Oklahoma, supervised a tour of 35 advanced students of petroleum engineering through the West Edmond field of Oklahoma February 2. The trip was made to obtain data regarding the drilling and operating methods used in that area.

Scaffold Facilitates Furnace Inspection

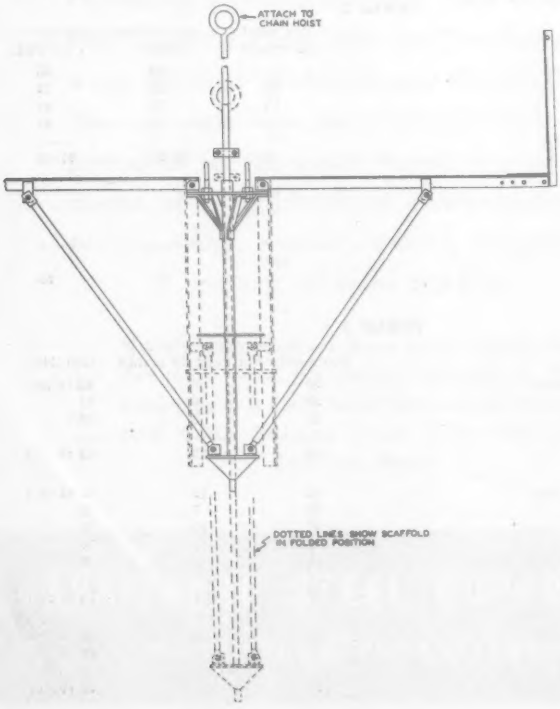
IN inspecting and repairing the vertical type of furnace used in some Sinclair Refining Co. installations, a special type of scaffold, built on the umbrella principal, has been devised to facilitate operations on or near the top of the furnace setting. This device is illustrated in the plan and elevation drawings shown.

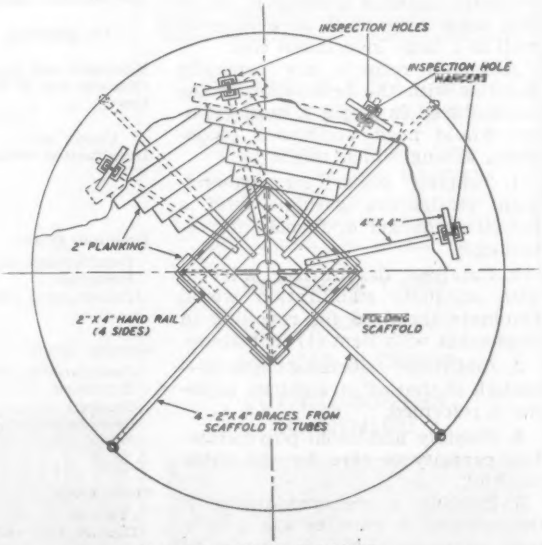
The scaffold is built around an approximately 1-in. rod. Four 2-in. by 4-in. braces extend outwardly to attach to tubes in the heater coil. A flanged collar fitting around the main central rod secures the inside ends of these radial braces and is free to slide up and down on the vertical rod. Angular braces (see elevation drawing) extend from a fixed flange on the bottom of the rod to support the square angle-iron scaffold frame.

From this frame extend eight radial braces, to the outer ends of which elongated loops or hangers are attached. These hangers extend through inspection holes in the furnace top and through their upper loop ends are passed keys made of 4-in. by 4-in. wooden bars to further support and rigidify the scaffold. An eyebolt is fitted to the upper end of the main rod. Thus designed with the main central upper flanged tie plate slidable on the main rod, this plate may slide upward from the "open umbrella" position, the upper ends of the several braces describe arcs downward to fold closely against the main rod, presenting a small cross section to pass through the upper furnace throat.

In operation the folded scaffold is swung by means of a chain hoist attached to the superstructure above the throat and is lowered in the folded position into the still until it clears the inner wall to the desired distance The upper tieplate or pivot plate is pushed or allowed to slide downward, bringing the braces into the horizontal position. The ends of these braces are secured to their proper members, four main braces to still tubes by clamps, eight auxiliary braces to tierods and loops keyed through inspection holes as described earlier.

Over the level of the central platform frame 2--in. by 12-in. fitted boards are spread, the center boards bolted to the frame or the braces. Auxiliary boards may be spread across the braces as desired at any point on the scaffold. A handrail is attached around the platform, made of 2-in. by 4-in. boards, for safety. A cable safety line is fastened directly into the eyebolt of the main rod and to the superstructure, to function in case the chain hoist malfunctions in any manner. So designed and mounted, the platform is rigid and has sufficient strength with a wide safety margin. It enables workmen to adjust it any desired height and any distance below the inner upper surafce of the furnace for any purpose.




INSPECTION HOLES
INSPECTION HOLE HANGERS
4" X 4"
2" PLANKING
2" X 4" HAND RAIL (4 SIDES)
FOLDING SCAFFOLD
4 - 2" X 4" BRACES FROM SCAFFOLD TO TUBES

PLAN OF SCAFFOLD IN HEATER

A FEATURE OF THE OIL AND GAS JOURNAL

Effect of Mixtures of Oil and Water on Production of Oil

THE discussion of fluid flow and oil-reservoir performance has involved only simple homogeneous fluids. First, reservoir forces were defined, then the natural laws governing the flow of oil were described, followed by a discussion of the chemistry of oil-field water. Although neglected by engineers for a long time, it is now well known that mixtures of oil and water and of oil, water, and gas perform quite differently from oil alone, particularly when moving through capillary spaces in fine-grained rocks. Among the reasons for this are the marked differences in the viscosity and in the surface chemistry between oil and water, and also the differences in adhesion tension between rock and oil and rock and water.

For example, if you place a drop of water on a glass slide, the water stands up on the glass in the form of a slightly depressed spherical droplet. If you place a drop of light oil on the same glass, it spreads out in the form of a thin film and no spherical droplet is formed. If you place both oil and water on the glass, the two liquids do not mix; the oil spreads out in a thin film, and the water stands up in the form of a droplet or droplets separated from the oil by a definite bounding film. If you suspend vertically a capillary tube in a beaker of oil and another similar tube in a beaker of water, the water will rise higher than the oil, although water is heavier than oil. If you place oil in the capillary tube and then suspend it in water, the water will enter the tube and drive the oil upward. If you place water in the same tube and suspend it in the oil, no movement of the water takes place. The reason for these differences is explained by differences in the surface film of oil and of water. (Fig 1).

Surface chemistry of water and oil.—The energy or tension which tends to hold molecules of water together at the water surface to form a water droplet when in contact with air or a gas is called surface tension, and when the water is in contact with another liquid like oil, with which it does not mix, the energy is called boundary tension or interfacial tension. The tension exists because the molecules in the water phase are more concentrated than they are across the boundary in the air phase. The molecules in the water phase are attracted to each other and tend to crowd inward. At the boundary there is greater attraction in the concentrated liquid phase than in the dispersed vapor phase in the air, so that the molecules at the boundary are subjected to unequal attraction and are not at equilibrium across the boundary. The amount of energy, therefore, is approximately a measure of the extent to which a unit deviates from equilibrium. The size of molecules and the orientation of molecules at the surface are thought to affect surface energy and, therefore, surface tension. Small molecules like H-O-H, water, move more easily, crowd inwardly more, and hold together more strongly at the surface than large molecules like long-chain-hydrocarbon molecules, which make up oil. Hence the surface films of water hold together to form a spherical droplet while oil flattens out to form a thin film.

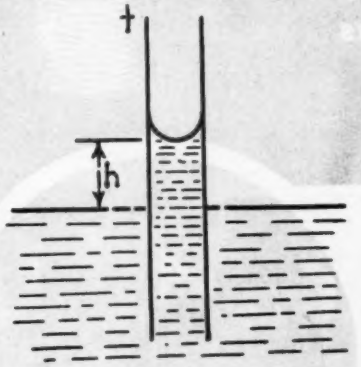


Fig. 1—Illustration of the well-known capillary effect. Water rises in a capillary tube, t, a distance, h, above its normal surface. The phenomenon is simply an automatic recording of the pressure difference across the meniscus of the liquid in the tube. The curvature of the meniscus is determined by the radius of the tube and angle of contact between the solid and liquid. The curvature of the meniscus and the pressure under the meniscus is less than that at the same height in a liquid with a plain surface. This produces a driving pressure which forces the water up in the tube. If oil is used in place of water, the curvature of the meniscus and contact angle are different from those of water and the rise is less

The surface tension of a pure compound measured against its vapor is a characteristic property. For example, pure water has a surface tension of 72 dynes per cm. Oil has a surface tension of about 30 (Texas crude oil ranges from 27.5 to about 34). Hence, the surface tension of crude oil is less than half the surface tension of water and accordingly has different wetting characteristics. Also, water and oil have a definite interfacial tension, depending upon the surface tension of the liquids which are in contact. For example, salt water has a surface tension of 56 to 72 depending upon the salinity; crude oil, a tension of 27.5 to 34, depending upon its composition. Interfacial tension of oils and waters vary from about 7 to 20 at 100°C.

Application of surface chemistry to oil-field operations.—These highly technical considerations are of much importance to oil-field work because of the effect surface chemistry has on mixtures of oil and water occupying rock pores, and on the forming and breaking down of emulsions of oil and water in flow tanks. The greater the surface tension of water, compared with that of oil, and the higher the interfacial tension between water and oil, the higher will water rise in capillary spaces. Hence, the more tenaciously will it be held in small pores, the more difficult will it be for oil to enter parts of the rock occupied by water, and the less the rate of flow of the oil fraction will be with respect to the water fraction. The greater the surface energy or tension of the water with respect to oil, the more tendency there will be for water in the bottom of a producing well to penetrate the sand pores around the periphery of the hole and to displace oil and close up capillaries to oil flow. Oil will not enter a capillary occupied by water unless forced in by outside pressure great enough to overcome the water pressure plus the capillary pressure.

Series prepared by F. B. Plummer, professor, petroleum engineering school, University of Texas

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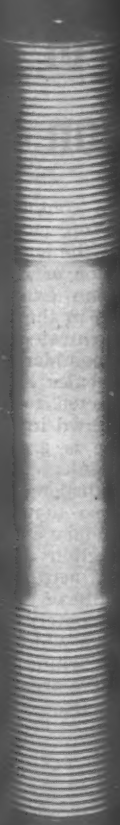

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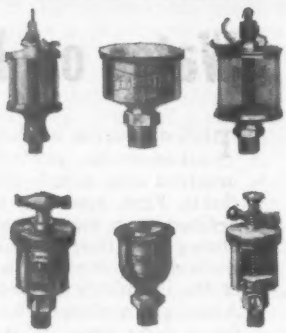

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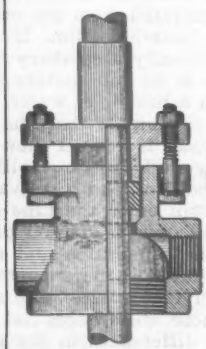

Fig. A-106

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The Refiner's Notebook

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

Crude-Oil Settlers

DESALTING may be accomplished by (1) heating and long settling, or by (2) heating and electrical methods which involve the establishment of a high-voltage field (16,500 volts) through the oil. Although electrical desalting costs only 0.75-1.2 cents per barrel, the common settling method is used by most refiners. (The Petroleum Rectifying Co. of California licenses the electrical process.)

Each crude oil presents a different behavior with respect to desalting but certain factors of operation are generally important:

1. **Temperature.**—Unless the oil is very viscous, a temperature of 200°-250° F. is advisable. The viscosity at the operating temperature should be about 2 centipoises.

2. **Pressure.**—Sufficient pressure is used to substantially suppress vaporization, as shown in Table 1. Higher pressures, except for the heavier vessels required, is advisable and pressures of 70 to 200 lb. are used by most refiners.

Table 1—Minimum Pressure for Settlers, P.S.I. Gage, Approx.

Temp. °F.	42° A.P.I. M.C. crude oil	35° A.P.I. M.C. crude oil
160	20	3
180	33	10
200	45	17
220	63	30
240	87	43
260	110	60
280	140	82

3. **Time** or velocity. The minimum residence time is about 1 hour but many crude oils appear to require even 2 hours. Table 2 shows the capacity of settler vessels in terms of barrels per day. Obviously the velocity must be slow, usually below 2 ft. per minute. Various packings, such as rings, steel wool, excelsior, stone, etc., are useful but not widely used because they become plugged with debris.

Table 2—Capacity of Settler Vessels

Size	B.P.D. for a settling time of— 1 hr.	1 hr.
5′ x 12′	1,000	500
6′ x 20′	2,400	1,200
8′ x 30′	6,400	3,200
10′ x 40′	13,300	6,650

4. **Wash water.** — Dilution with water at the temperature of the settler assists in removing salt. Enough water should be used to produce a brine that contains 2 to 5 lb. salt per barrel of brine, so that the concentration of emulsifiers will be reduced. Thus, enough water should be used to produce 0.2-0.5 bbl. of brine for each pound of salt in the crude oil, as in Table 3. Water is mixed into the oil by a valve or mixer plates but too violent mixing produces additional emulsification. The degree of mixing can be judged by the pressure drop through the mixers (often 12 to 40 p.s.i.)

Table 3—Proper Amount of Brine (by Adding Water)

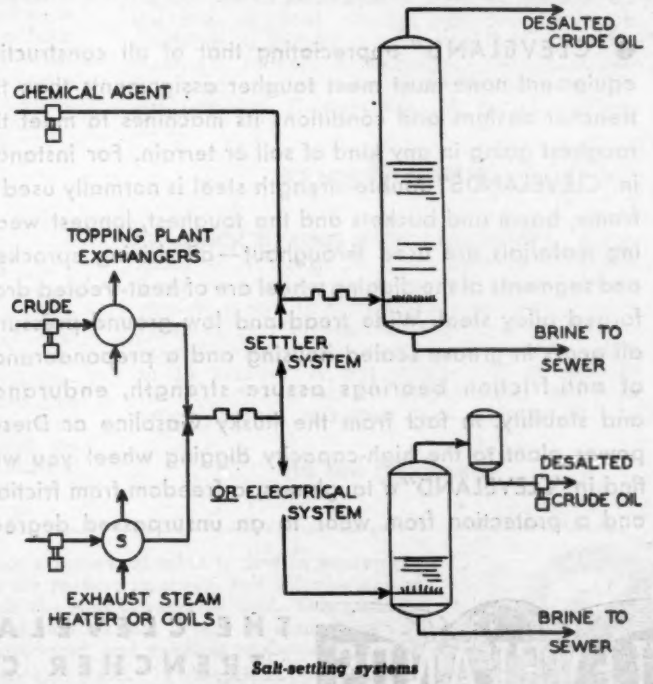
Salt content lb./1,000 bbl.	Amount of brine— Bbl./1,000 bbl. crude	% of crude
1,000	200-500	20-50
200	40-100	4-10
100	20-50	2-5
20	4-10	1

5. **Solids at Interface.**—Accumulations of rust, sand, scale, etc., at the interface should be periodically removed by cleaning or by draining the interface material through try-cocks.

6. **Brine pH.** — Caustic soda is often added in amounts large enough to produce a pH of 8 to 9 in the brine. This protects the steel from corrosion as well as assisting in breaking most emulsions.

7. **Brine depth.** — Separation occurs most rapidly while the oil is passing upward through the brine. Depths of even 25 ft. above the crude-oil inlet have been advantageous in a few instances. Likewise, water is carried by the oil and hence oil depths above the interface of 15-20 ft. are thought necessary by some operators. Obviously, vertical settlers are required for such depths.

8. **Treating agents.** — Demulsification agents are necessary for many crude oils, but the only way to select them is by plant experience with each crude oil.



Salt-settling systems

No. 30 in a series by W. L. Nelson, professor of petroleum refinery engineering, University of Tulsa

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OIL AND GAS EQUIPMENT Digest

IT'S NEW CHECK IT

by Kenneth B. Barnes

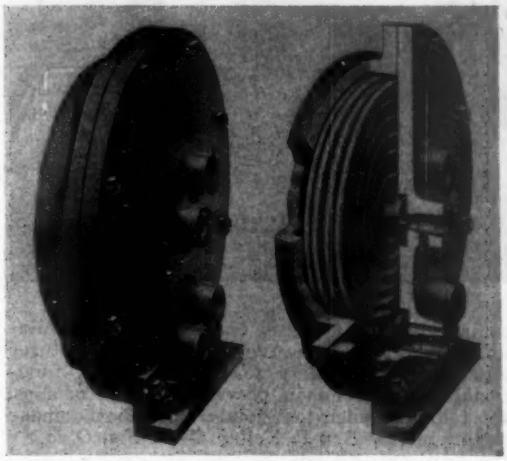
(1) PLASTIC-TYPE TUBING PROTECTORS are a new item in that full production has been resumed after 2 years' "layoff" because of war work. The oil-proof, wear-resistant plastic rings are made so that they become an integral part of the standard A.P.I. tubing collar.

Used in many types of applications, especially in pumping wells below about 4,000 ft. and where tubing collars may wear because of the pulsation of the tubing from pump action, more than 5,000 of the protectors have been installed in one North Louisiana field alone. Here, applied to almost every well, some have had over 5 years' service so far. From 8 to 100 are used on each well. On some crooked holes, total pumping costs were more than gross revenue, but the operator reported the protectors aided in reducing wear and repairs, and assisted in replacing operations on a profitable basis. In wells where collars were worn within 2 weeks, the protectors since have been in service for several years without serious wear. Protection to casing is afforded and operators have reported sucker-rod life extended in some wells because of smoother pumping action. *Patterson-Ballagh Corp., Los Angeles, Calif.*

IT'S NEW CHECK IT

(2) HELIFLOW HEATERS AND COOLERS are a radically different design of small heat exchanger which uses a minimum number of joints on both fluid circuits. This reduces the possibility of leakage or contamination between the two fluids circulated. Constructed in either single or multiple-coil types, the coil elements themselves are free to twist like a spring to automatically relieve all stresses from expansion or contraction which accompany temperature changes. The multi-coil types also are available in multi-cell units.

The design obtains uniform velocity at all points through the coil, and the two fluids pass in counterflow. To clean, removal of the casing exposes the entire coil. The units can be quickly



installed in a variety of positions: to the ceiling, on the side of an engine or other equipment, on the wall or floor. Casing, coil, and parts are available in a number of standard construction materials. Bulletin 58 suggests a variety of applications ranging from water coolers to emulsion breakers. *Graham Mfg. Co., Inc., New York, N. Y.*

IT'S NEW CHECK IT

(3) QUICK DRYING RUST PREVENTIVE, designated as Nox-Rust No. 369, forms a tenacious, permanent, glossy black coating which will not chip or crack. In comparison with some former types of rust preventives requiring at least ½ hour for drying, the new product cuts this time to 15 minutes. A test sample will be sent to readers of The Oil and Gas Journal interested in the product. *Nox-Rust Corp., Chicago, Ill.*

IT'S NEW CHECK IT

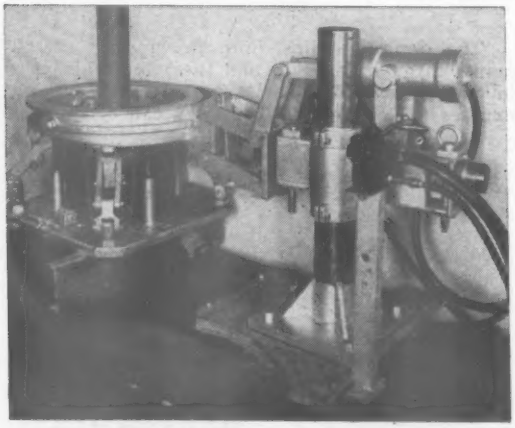
The Oil and Gas Equipment Digest presents a review of what is new in equipment and trade literature . . . makes it possible for readers to obtain full information on every subject by use of convenient "Check It—Mail It" service card. This periodic feature of The Oil and Gas Journal will include all that is new in equipment . . . at a time when new products are being introduced, and existing products improved.

Keep Informed. Save Time. Tear Out Card. Check It. Mail It.

OIL AND GAS EQUIPMENT Digest

IT'S NEW CHECK IT

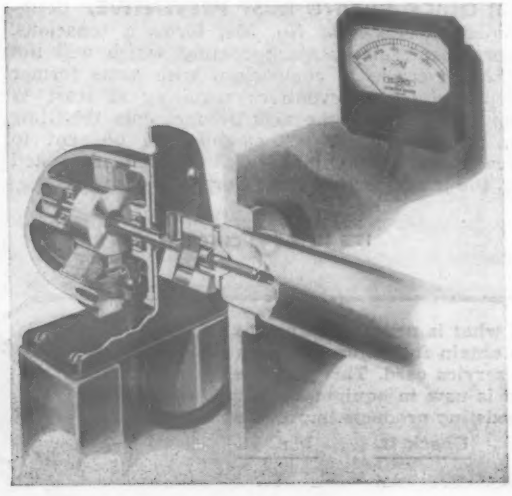
(4) KELCO AIR-OPERATED SLIPS are a new development for rotary drilling which provide special features both from safety and operational standpoints. Made to accommodate 3½-in. to 4½-in. o.d. drill pipe, the new air-operated unit is of



compact design for easy transportation, installation, operation. Objective by the manufacturer was to provide safety for workmen and functional aid to floor men, prevent droppage of slips, short kinks under tool joints and other damage to equipment. *Ben F. Kelley Co., Tulsa, Okla.*

IT'S NEW CHECK IT

(5) ELECTRIC SPEED INDICATOR with range of 100 to 5,000 r.p.m., consists of two units. The pickup is a miniature six-pole alternator, with a permanent magnet rotor which is mounted on the shaft whose speed is to be measured. The indicator, of permanent-magnet, moving-coil type



meters, the pickup output on a 3.75-in. scale covering a 95° arc. Resistance of the indicator has been made sufficiently high so size or length of the connecting leads have no effect on accuracy. The indicator may be located any distance from the pickup. The apparatus requires no shafting, coupling, conduits, commutators or slip rings. Pickup winding is stationary. Speed indicator is independent of direction of rotation. Special scales are available to read in other scales, such as feet per minute, process cycles of varying time, etc. *Reliance Electric & Engineering Co., Cleveland, Ohio.*

IT'S NEW CHECK IT

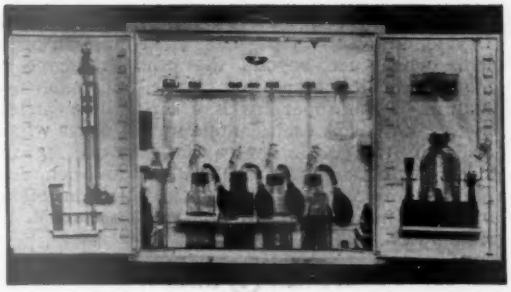
(6) CRACKED CYLINDER BLOCKS and similar metallic breakage problems may be repaired by a new shop-tested method resulting from research and development work in this field. The electrical-supply circuits and auxiliary apparatus are housed in a steel cabinet and the welding electrode is equipped with an air-cooled holder to

keep the work cool and eliminate dangers resulting from high temperature welding. Nickel rod is employed on cast-iron blocks and aluminum rod on aluminum heads and blocks. Test heads can be used to check the work for leaks and pinholes. Such leakages are easily closed, if present, by Moguloid solution, an important new product in itself for many repair uses.

This does not attempt to seal the inner scale deposit of the casting, but rather enters the crack at maximum position and by colloidal action of its base forms bond within ends of the fracture. The film builds up in rapid and thin layers of "cushions" until the final film is forced, by the back pressure within the cooling system, to the previously deposited layers of the material itself. *Metallizing Co. of America, Chicago, Ill.*

IT'S NEW CHECK IT

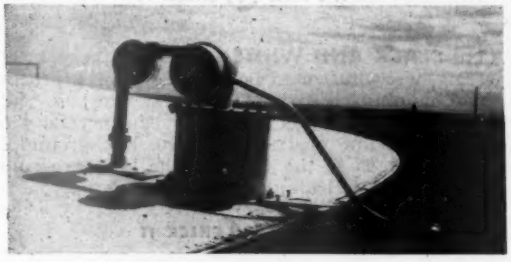
(7) WATER-TESTING KIT is a new portable, built-in "field laboratory" which provides a flexible and convenient means for testing of water samples. Compact, it is devised to accommodate any one or all of the following tests: hardness, alkalinity, chloride, phosphate, pH, sulfite, sulfate, and dissolved oxygen. The testing equipment is contained within a specially designed cabinet, and can be rearranged at will. The cabinet is equipped with a glareless fluorescent lamp so that delicate



end points may be readily seen, and specially designed titration tables help to eliminate possible splashing. A 24-page bulletin lists this apparatus and gives in detail methods of analysis. *The Bird-Archer Co., New York, N. Y.*

IT'S NEW CHECK IT

(8) REMOTE INDICATING GAUGE shows accurately the liquid level in a tank or other storage



which may be several miles away. Illustrated (top) is one of the transmitters mounted on a crude-oil tank. It is fastened to a 12-in. diameter vertical guide pipe which keeps the float properly aligned regardless of movement of gases and liquids in the tank. The remote gauge (bottom) receives the transmission over one wire and enables the apparatus to utilize simplex telephone circuits for long distances. In some installations, pipe-line dispatchers receive gauge readings automatically at a preset time, then the wire is available for other uses. *Nelson Automatic Gauge Co., Tulsa, Okla.*

IT'S NEW CHECK IT

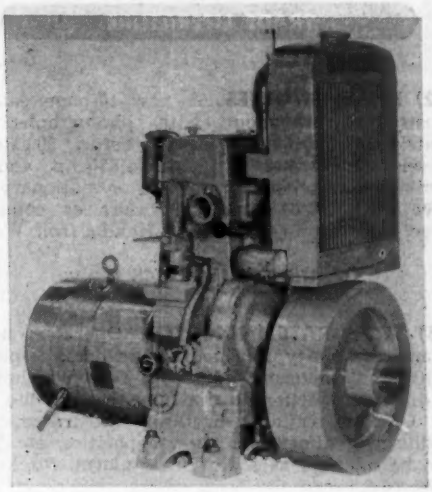
(9) REVOLUTIONARY ENGINE DESIGN has been announced covering the usage of either gas or oil for fuel in diesel engines. Changeover is as simple as closing one valve and opening another, while operating continuously at full load. The new discovery is the result of experimentation started 17 years ago. In the many places where gas is used for fuel, the diesel design will give yield of approximately 35 per cent thermo-efficiency in comparison with the normal 25 per cent or so common in spark-ignited gas engines. *The Cooper-Bessemer Corp., Mount Vernon, Ohio.*

IT'S NEW CHECK IT

OIL AND GAS EQUIPMENT Digest

IT'S NEW CHECK IT

(10) POWER-PAK DIESEL UNITS furnish a compact self-contained source of electric power which may be quickly installed and is readily portable. Of particular interest to many oil-field users because ordinary fuel oil is consumed, the four-cycle diesels (8 and 16 hp.) are equipped with Bosch fuel system and Van der Horst chromium impregnated replaceable cylinder liners. A pat-



ented dual-compression system permits easy starting by hand. The CD model is rated for 3½ and 4½ and the CE for 7½ and 9½ kw. The generators are supplied for different voltages, in either d.c. or single or three-phase a.c. Field rheostat is included for regulating output voltage. *Lister-Blackstone, Inc., Milwaukee, Wis.*

IT'S NEW CHECK IT

(11) THERM-O-FLAKE INSULATING GUN is a real speed-up development in the application of insulation coating to high-temperature surfaces on tanks, towers, refractory walls, and the like.

Operating on standard air and water temperatures, the gun siphons dry Therm-O-Flake insulation directly from the shipping carton, mixes with water, and sprays to the setting surface in one operation. Premixing is eliminated, and overall application is reported six to eight times faster. The gun weighs but 4 lb., and is furnished complete with 15-ft. section of air, water, and vacuum hose and necessary valves and fittings. *Illinois Clay Products Co., Chicago, Joliet, Ill.*

IT'S NEW ✓ CHECK IT

TRADE LITERATURE

(12) DIESEL ENGINES. A new 16-page catalog, illustrated throughout with photographs and drawings showing details of Series 50 Hendy diesels, which range from 350 to 675 hp., and are available in models for marine or stationary applications. Also, with generators as complete diesel-generator sets. *Joshua Hendy Iron Works.*

IT'S NEW ✓ CHECK IT

(13) FLOW-RATE INDICATOR Operates on the rotameter area-type principle, and has a V-ported transparent metering tube with float which rises in direct proportion to the flow through the meter. Catalog available, profusely illustrated, with engineering dimensions, flow capacities, etc. May also be adapted as a flow rate alarm. *Fischer & Porter Co.*

IT'S NEW ✓ CHECK IT

(14) TRAINING MANUAL for mechanical fuel pumps and vacuum pumps. Booklet containing detailed cut-away drawings, with instructions for inspection, maintenance, repair. Written in clean concise manner for use by all those who operate and maintain this type equipment. *AC Spark Plug Division, General Motors Corp.*

IT'S NEW ✓ CHECK IT

(15) BOILER, HEAT EXCHANGER AND CONDENSER TUBES. A brochure, well illustrated, and supported by engineering data, available on Electrunite tubes. These are produced by electric resistance welding. Description of the electric resistance welding process for manufacturing Electrunite tubes is given. Also, instruction card (for hanging on wall) on care and maintenance of boiler tubing is included. *Republic Steel Corp., Steel and Tubes Division.*

IT'S NEW ✓ CHECK IT

(16) APPARATUS FOR DETERMINING STRESS. Developed to solve pipe-stress determination problems which are beyond the practical scope of mathematical computation. Basic and exclusive feature of the apparatus is a series of electrical measuring heads, each containing six gages which are refined to such a degree that they can register stress deflections of a millionth of an inch. Applicable on all pipe-stress calculation problems involving more than four piping ends. *The M. W. Kellogg Co.*

IT'S NEW ✓ CHECK IT

(17) FLEXIBLE COUPLINGS. Designed for applications where space limitations make a close-coupled connection necessary or desirable. By bolting the coupling flange directly to a flywheel, brake drum, or similar component, complete flexibility is provided between driving and driven units. New bulletin includes engineering details, application diagrams and tables of sizes, ratings and dimensions. *Farrel-Birmingham Co., Inc.*

IT'S NEW ✓ CHECK IT

(18) BLACK AND WHITE PRINTS, a very interesting, well-illustrated booklet, describing process for obtaining positive black and white prints directly from the subject, without the necessity of making an intermediate negative. Background is white, just as in the tracing. The lines are solid black. *Charles Bruning Co., Inc.*

IT'S NEW ✓ CHECK IT

(19) MODERN CEMENTING PRACTICE. Carefully prepared and effectively illustrated news letters on various phases of modern oil-well-cementing practice available to those interested. *Baker Oil Tools, Inc.*

IT'S NEW ✓ CHECK IT

(20) RUST PREVENTIVE. A folder giving details of rust inhibitors for both ferrous and nonferrous metals. Included are liquid-drying coatings; grease-type nondrying coatings; semidrying waxy finishes; hard-drying films, and stripping-type plastic-like solid finishes. Applied hot or cold, by dipping, spraying or brushing. *Non-Rust Corp.*

IT'S NEW ✓ CHECK IT

(21) CLAMPS AND CABLE CONNECTIONS FOR ELECTRIC WELDING, a new catalog describing a full line of electrode holders, ground clamps, cable connectors, machine terminals and cable lugs. *Tweco Products Co.*

IT'S NEW ✓ CHECK IT

The Oil and Gas Equipment Digest presents a review of what is new in equipment and trade literature . . . makes it possible for readers to obtain full information on every subject by use of convenient "Check It—Mail It" service card. This periodic feature of The Oil and Gas Journal will include all that is new in equipment . . . at a time when new products are being introduced, and existing products improved.

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REFINING

W.P.R.A. Annual Meeting Canceled by Directors

Directors of Western Petroleum Refiners Association, complying with the request of the war mobilization director, canceled the annual spring meeting of the organization. The board, with the executive and financial committees, will meet in Tulsa at a date to be fixed.

Lubrication Engineers Form Organization

A nonprofit group, the American Society of Lubrication Engineers, has been organized with headquarters at 135 South LaSalle Street, Chicago. C. E. Pritchard, Republic Steel Corp., Cleveland, is president; J. C. Peebles, Illinois Institute of Technology, vice president; B. H. Jennings, Northwestern University, secretary-treasurer.

The membership will include representatives from the educational field, builders of machinery, lubricant suppliers and lubricant consumers. Indications are that a large proportion of the membership will be made up of consumers. The primary purpose of the organization is to further the technology of application of lubricants and to promote the interests of the consumer, educational and development groups. A meeting of the society was held in Chicago, February 8-9.

Midwest Research Group Launches Broad Program

KANSAS CITY.—The newly formed Midwest Research Institute here has launched full-scale production following a meeting of trustees February 5, at which the extensive research program to be carried on was announced.

The institute's laboratories, already employed in the study of a number of projects are being equipped and expanded to cover all research activities.

Harold Vagtborg, nationally known scientist and former director of the Armour Research Foundation, Chicago, has arrived in Kansas City to assume his duties as president of the institute.

Activities of the institute will cover chemistry, physics, metallurgy, mineralogy, biology, bacteriology, chemical, civil, electrical, and mechanical engineering and other fields of science and science application.

Cooperative Refiners Buy Adair-Morton Holdings

KANSAS CITY.—Cooperative Refinery Association, subsidiary of Consumers Cooperative Association, has purchased 68 producing oil wells and 4,375 acres of undeveloped oil leases from Adair-Morton Co., of Wichita, Kans. The wells produce 1,045 bbl. of sweet crude a day. This purchase brings to 362 the number of producing oil wells owned by the association.

Colonial Beacon Refinery Receives Safety Award

BOSTON.—Achieving the record of 1,008 days—2,880,716 man-hours—without loss of a moment's time from an accident on the job, the Everett refinery of Colonial Beacon Oil Co., at Everett, Mass., has won the prized Liberty Mutual Insurance Co. Safety Award.

Beginning in December 1941, the refinery's accident-free run continued until last September, when a workman, replacing a heavy iron manhole cover, suffered a crushed finger. The record is especially significant in view of the fact that the plant handled tens of thousands of tons of one of the most powerful substances known, under pressures—heated it, cooled and condensed

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it, processed it through pipes and valves, and moved it to and from tankers, tank cars, storage tanks, barges and trucks.

Many Refiners Considering Postwar Expansion Plans

Reports indicate that many refiners have been formulating expansion programs for the postwar period. Among projects announced as planned or under way are the following:

Advance Refining Co., Inc., Centralia, Ill.—Stabilizing unit.

Clark's Super Gas Co., Inc., West Allis, Wis.—Increase of throughput to 5,000 bbl. daily, of which 2,000 will be charging stock for new cracking unit; additional storage and complete revamping of pumps and motors; installation of overhead vapor stabilizer.

Frontier Fuel Oil Corp., Buffalo, N. Y.—Cracking plant to supplement present topping plant and refinery.

Gladewater Refining Co., Gladewater, Tex.—Rebuilding of plant in line with latest designs.

Hutex Oil & Refining Co., Houston.—Installation of reforming unit.

Indiana Farm Bureau Cooperative Association, Inc., Indianapolis.—Cracking unit of 2,000 bbl. capacity.

Krieger Oil Co. of California, Clearwater, Calif.—Installing vacuum-distillation units and two new towers, also plant for asphaltic emulsion.

McMurrey Refining Co., Tyler, Tex.—Naphtha-kerosene reforming unit, polymerization unit, small catalytic-cracking unit.

Mid-States Refining Co., Falls City, Neb.—Road-oil manufacture.

National Cooperative Refinery Association, McPherson, Kans.—Catalytic polymerization.

The Pennzoil Co., Oil City, Pa.—Construction of M-E-K solvent dewaxing and concurrent wax recrystallization plant.

Rado Refining Co., McAllen, Tex.—Building an ethyl lead plant and new skimming plant to raise crude capacity from 1,000 to 3,000 bbl. daily.

Rock Island Refining Corp., Indianapolis.—Catalytic polymerization unit under construction.

Root Petroleum Co., Shreveport.—Additions to remove bottlenecks in 100-octane producing equipment.

The Shallow Water Refining Co., Garden City, Kans.—Catalytic-cracking unit, 1,000 bbl. daily capacity.

Taylor Refining Co., Taylor, Tex.—Additional cracking facilities.

Valley Refining Co., Roswell, N. M.—Increase in cracking facilities; manufacture of petroleum specialties and lubricating oil.

W. T. Waggoner Estate, Refinery Division, Electra, Tex.—Enlargement of refining capacity.

Wickett Refining Co., Wickett, Tex.—Increasing throughput.

Worth Refining Co., Chicago.—Expect to construct cracking unit, together with water terminal.

Bigger Aviation-Gasoline Program Under Study

WASHINGTON.—Tentative plans under consideration by Petroleum Administration for War call for eight additional aviation-gasoline plants as part of an expansion program necessitated by growing demands for warplanes.

The B-29 superfortresses, with four 2,200-hp. engines, consume enormous quantities of gasoline. With the production of these planes increasing steadily, it was decided that high-octane facilities must be expanded to keep them flying.

A spokesman for PAW said expansion of facilities was under consideration, but not ready for a formal announcement. Other sources said that only a sudden collapse of Germany would result in abandonment of the expansion plans.

New plants probably could not be brought into production for about 9 months, possibly a year.

The United Nations, with this country the principal supplier, are now producing more than 500,000 bbl. of 100-octane gasoline daily.

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They are designed for the specific power requirements in each of the three main branches in the oil industry; drilling, oil-well pumping, and pipeline service.

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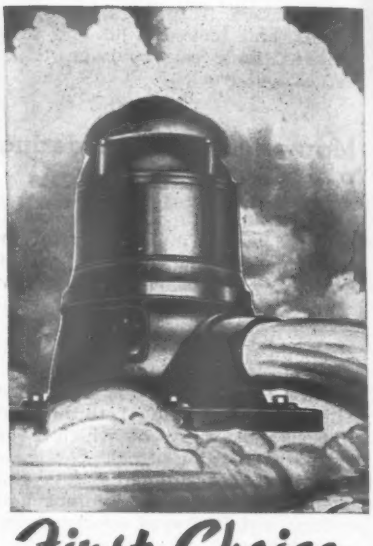

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WELL WATER SYSTEMS
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Natural Gas

Pressure-Maintenance Plant Completed in Texas

A new 60,000,000-cu. ft. capacity pressure-maintenance plant, constructed for Trinity Gas Corp. in the Sejita field, Duval County, Texas, is now in operation. The plant is designed to produce approximately 1,500 bbl. of petroleum products daily, including aviation gasoline.

Gas from 15 wells in the Sejita field is processed at 1,700 p.s.i. and is then compressed to 2,500 p.s.i. and returned to the field sands.

The Sejita plant was designed by Hudson Engineering Corp., Houston.

Projected Line to Canada Opposed by Commission

OKLAHOMA CITY. — The state Corporation Commission will file a protest against the application of Panhandle Eastern Pipe Line Co. for a president's permit for the construction, maintenance and connection at the international boundary near River Rouge, Mich., of facilities for exportation of natural gas to Canada, according to Reford Bond, chairman of the commission. Bond received notice from Federal Power Commission that the application had been filled.

Bond said the commission did not know the purpose or the need for such a line. "The applicant has holdings in the Hugoton gas field," he said. "If the application is granted, it will mean transportation of Oklahoma gas to Canada."

Supreme Court Hears Final Arguments in Rate Case

WASHINGTON.—Final arguments in a complaint of three natural-gas companies against rate-fixing policies of Federal Power Commission have been heard by the Supreme Court. Rates of these companies, which transport and distribute gas from the Texas Panhandle to Colorado and southern Wyoming, were reduced by order of the commission, and the commission's action was upheld by the Tenth Circuit Court of Appeals.

Canadian River Gas Co., which sells gas at Clayton, N. M., to Colorado Interstate Gas Co., contended the commission had exercised rate-regulatory powers over the complainants' producing and gathering facilities which are not subject to regulation.

A commission order, reducing Canadian rates by $561,000 annually, was based, in part, on a valuation of the company's producing and gathering facilities, Canadian attorneys told the court.

Colorado-Wyoming Gas Co., which purchases gas from Colorado Interstate for resale in northern Colorado and southern Wyoming, contended a $119,000 annual reduction in its rates had been ordered by the commission in a "bold and arbitrary merger" of rate relationships among the three companies.

Ferguson Heads I.N.G.A.A. Offices in Washington

WASHINGTON. — Independent Natural Gas Association of America offices have been opened in Washington, with John A. Ferguson, recently named executive director, in charge. The association will continue to maintain its Mid-Continent offices in Oklahoma City.

Kansas Power & Light Co. Plans to Widen Facilities

WASHINGTON. — Federal Power Commission will hold a hearing March 14 on the application of The Kansas Power & Light Co., Topeka, for permission to construct and operate 25.8 miles of natural-gas pipe line and a gasoline-recovery and dehydration plant.

The pipe-line project embraces 18.5 miles of 16-in. line in Barber County, Kansas, to connect with the applicant's existing 18-in. line in Pratt County, Kansas; 20,500 ft. of 8-in. line in Barber County to connect with the proposed 16-in. line and extend to the east; 4,500 ft. of 8-in. line in Barber County to connect with the proposed 16-in. line and extend to the west; 14,000 ft. of 4-in. line to connect wells in Barber County.

The facilities are to be used for transportation of natural gas from the Lake field in Barber County to the company's pipe-line system at a point south of Pratt, Kans.

Cycling

Hearing on Cycling Rules For Lisbon Held Open

SHREVEPORT. — A hearing on the proposed rules for cycling in the Lisbon field of Claiborne Parish is being held open for 30 days in order to permit opposing groups to offer additional evidence or to request reopening of the hearing. Announcement of the extension was made by Joseph L. McHugh, state minerals commissioner, following a 2-day session devoted to the hearing.

Witnesses testified for Union Producing Co., Big West Drilling Co. and land and royalty owners in opposition to any change in operation of the field. At present liquid contents of gas from the field are removed and the dry gas is sold to pipe lines. No testimony was offered in favor of the cycling plan.

Attorneys representing opponents of the plan requested permission to offer rebuttal testimony in the event that additional evidence is placed in the record by the state authorities later. This request was granted by Commissioner McHugh and both sides dispensed with closing statements.

The hearing has attracted unusual interest because Lisbon field pipeline facilities of Memphis Natural Gas Co. are now a subject of court inquiry, following objection by the State of Louisiana to additional drains on the state's natural-gas resources.

A letter from Gov. James H. Davis, read at the hearing by J. I. Smith, executive counsel for the governor, declared that adequate natural-gas and oil conservation is in the interest of the common welfare.

"Time has shown that the state has taken a very great penalty for lack of adequate conservation practices during the period of our virgin forests were denuded," said the letter. "How much greater, therefore, must be the penalty if we fail to conserve our natural gas and oil which are irreplaceable resources."

Witnesses called to give detailed technical information regarding the conditions of the Lisbon field expressed the opinion that cycling in the Lisbon field would be an economic waste.

W. F. Fulton, chemist, and T. W. Johnson, assistant superintendent of the production engineering department, both of Union Producing Co., and E. O. Bennett, independent petroleum consultant, each testified that cycling of the gas would not be feasible.

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PIPE LINES

Panhandle Eastern Plans $9,000,000 Program for 1945

A $9,000,000 pipe line project to increase deliveries of natural gas from Oklahoma and Texas into the Ohio-Michigan area by 50,000,000 cu. ft. daily last week was assigned a top WPB priority rating of AA-1.

The project is scheduled for completion by November 1.

It involves increasing the capacity of one of the two Panhandle Eastern pipe lines between the Hugoton gas field and the Ohio Fuel Gas Co. system, from 500-lb. pressure to 600 lb. by installing additional compressors. Also involved is construction of about 32 miles of 24-in. pipe line on the eastern end of the line to permit delivery of the additional gas into the Ohio Fuel system near Muncie, Ind., and Maumee, Ohio.

Edward Falck, director of WPB's Office of War Utilities, described the project as "absolutely essential" in order to prevent interruption to war production next winter.

The pipe line company also has taken steps to obtain necessary authority for the project from the Federal Power Commission under the Natural Gas Act.

Alternate Line Routes Surveyed in Arabia

Seven alternative pipe-line routes are reported to have been surveyed by the Arabian American Oil Co., a United States corporation having large concessions in Arabia. Results of these surveys are said to have been submitted to the parent companies, Standard Oil Co. of California and The Texas Co. The surveys are for routes from the main Saudi Arabian fields to Tripoli or Saida areas in Lebanon, the Haifa or Gaza areas in Palestine, or El Arish, Port Said or Alexandria areas in Egypt. These routes cover more than 1,000 miles in each case. The longest and most expensive route would be the one to Alexandria. Of the alternatives, the Arabian American company is believed to be giving attention to selecting either the Tripoli, Haifa, Port Said or Alexandria routes.

Cost of construction by different routes has been estimated to be from $55,000,000 to $75,000,000.

The Arabian American pipe line would involve international strategy, tanker programs, and naval operations. Relations are reported to be excellent with King Ibn Saud.

New Lines Enhance Mississippi Outlet

Crude oil is being delivered by Interstate Oil Pipe Line Co. facilities from Gulf Refining Co. operations in the recently opened Gwinville pool of Jefferson Davis County, Mississippi, to a loading rack at New Hebron, Miss.

Pure Oil Co. is reported to be laying a 3-in. line from its recently completed condensate and gas well at Carthage Point, 9 miles below Natchez, Miss., to the 22-in. trunk line of Interstate Natural Gas Co.

Interstate Plans Route Of Mississippi Outlet

An amendment has been filed changing somewhat original plans for construction of three crude-oil pipe lines by Interstate Oil Pipe Line Co., according to information contained in the Petroleum Administration for War's latest pipe-line progress report.

It is now contemplated that construction of the crude lines from Mississippi oil fields to Baton Rouge, La., shall cover a 38-mile, 8-in. line from Canfield pool to Liberty station, located in Amite County, Mississippi, a 32-mile, 10-in. line from Mallalieu field to Liberty station, and a 50-mile, 12-in. line from Lib-

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erty station to Maryland tank farm, north of Baton Rouge.

Field work has started on surveying the route of the new system and the site of the Liberty station has been purchased.

India-China Line to Aid War Against Japs

WASHINGTON. — A 2,000 - mile lend-lease pipe line is being built into the interior of China to supply the Allied air attack on Japan, Leo T. Crowley, foreign economics administrator, disclosed here last week.

Crowley told the House Foreign Affairs Committee the pipe line, built through combined American, British, Chinese and Indian manpower and resources, "will increase many fold the 15,000 tons per month that once moved over the old Burma road."

It will "enable the combined forces of the United Nations to mount new and greater offensives from China," he testified. Crowley went before the committee to urge a 1-year extension of lend-lease which, otherwise, will lapse June 30.

The pipe line, he said, is just one of many lend-lease operations aimed at stepping up military supplies for China and Allied forces in the east.

A fleet of 15,000 American trucks will be delivered to China over the new Ledo road to set up a Chinese transportation system. A thousand American technicians are in India or on their way there and 1,000 Chinese will be brought to this country for training to help their country "handle the greatly increased volume of lend-lease materials that will be moving in," he said.

Crowley reviewed the whole history of lend-lease operations on all fighting fronts and said reverse lend-lease aid is coming to America's war effort from Britain at the rate of $2,500,000,000 a year.

Postwar Effect of WEP 20-In. Discussed

A large volume of petroleum products which before the war moved by railroad will go by pipe lines which have been built during the war period, according to a forecast of the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission. The most important of these wartime products lines is the 20-in. system of the War Emergency Pipelines, Inc. The Plantation Pipe Line Co. system will also have an important effect.

For the period from January 27 to February 2, the WEP 20-in. pumped 228,111 bbl. daily from Beaumont, Tex. Rated throughput capacity of the line is 225,000 bbl. of gasoline daily. The line holds approximately 3,000,000 bbl. It is estimated that with three units operating at each pump station, gasoline will travel through the line at the rate of 122 miles per day; it takes 12½ days for a shipment from Texas to arrive in New Jersey.

Tenn. G. & T. Withdraws Application for Extension

WASHINGTON.—Federal Power Commission has announced withdrawal by Tennessee Gas & Transmission Co. of an application for authority to build and operate 65 miles of additional pipe line to tap more Texas gas fields for its big pipe line to West Virginia from Corpus Christi. The company said it had been unable to obtain firm contracts with producers for additional supplies of gas. A hearing on the application set for February 8 was canceled. State regulatory bodies had been invited to participate in the hearing.

The proposed additional pipe lines would have reached the Odem field in San Patricio County, Riverside field in Nueces, Quinto Creek field in Jim Wells, Tom O'Connor and Refugio fields in Refugio, Heard field in Bee, Hyser, Placedo and McFadden fields in Victoria, and Menefee and Hungerford fields in Wharton.

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General Contractors

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PIPE LINE ENGINEERS AND CONTRACTORS

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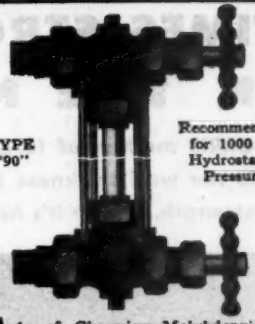

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This is one of the complete line of Penberthy gages that meet every liquid level gage requirement.

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3 TIMES STRONGER IN THE NOSE

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BUY WAR BONDS

FOR VICTORY

Exploration and Drilling

Week's Highlights

THE Mississippi - Alabama area, which contributed two new oil fields in the first half of 1944 and four new fields in the last half is starting 1945 in promising fashion.

The Langsdale field in Clarke County, Mississippi, just 4½ miles west of the Alabama line, is the first discovery of 1945. The discovery well, Kirby Petroleum Co. 1-B Long Bell Petroleum Co., NW NW SW 30-1n-18e, pumped 156 bbl. of 18.1° gravity oil in the first 24 hours, 144 bbl. the second day, and averaged 131 bbl. daily for the next 5 days, for a total of 955 bbl. during the first week.

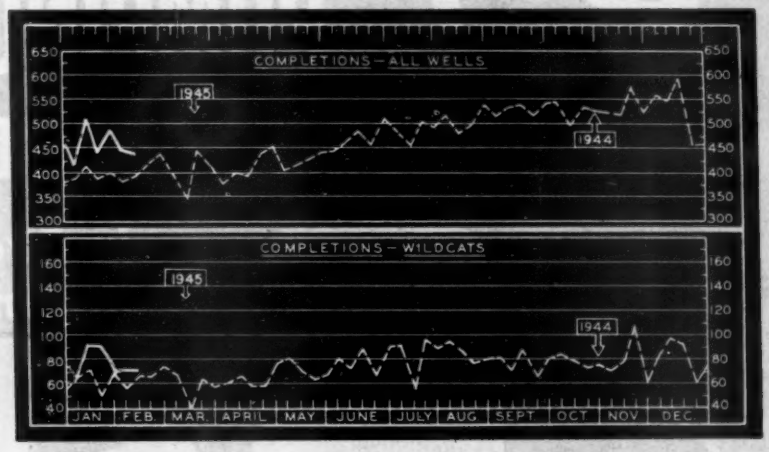
This test was drilled to a total depth of 5,620 ft., or 535 ft. below the top of the Massive sand. It was then plugged back to 3,740 ft. in the Eutaw, and is producing from three 10-ft. intervals in the Eutaw at 3,650-60 ft., 3,707-17 ft., and 3,729-39 ft., each of which was perforated with 60 shots.

Surface elevation is 236 ft., and tops are reported as follows: Eutaw —3,411 ft., Tuscaloosa —3,807 ft., Marine Tuscaloosa —4,507 ft., Massive —4,849 ft., with original total depth —5,384 ft., and plugged back total depth —3,504 ft.

The new field lies between the Heidelberg and Eucutta fields of Mississippi and the Melvin and Gilbertown fields of Alabama. In the meantime, west of the Heidelberg and Eucutta fields, in the Soso area, Gulf Refining Co. 1 Edwards-Bailey, NW SE 27-10n-13w, continues testing stringers above the main body of the Massive sand, after the Massive proper proved disappointing in coring tests. This well looked like a gas-condensate discovery in the basal Eutaw, but the showing was passed up in order to test the Massive.

In Marion County, Mississippi, Humble Oil & Refining Co. 1 Evans, NW NE 15-2n-18w, a promising test about 5 miles northwest of the Baxterville field in Lamar County, has successfully run and set 5½-in. casing at 9,221 ft., after the 10¾-in. surface string parted at 450 ft.

The 1944 results assure the continuance of active wildcatting in 1945, and the first half of 1945 may produce more new fields than the last half of 1944.



Solid line charts current weekly completions, service wells in Eastern area included

COMPLETIONS IN ALL FIELDS . . .

Week ended February 10, 1945

	Oil	Gas	Dry	Total	Footage	Total Comp. to date 1945	1944
N. Y., Penna., W. Va.	44	15	*39	98	160,100	588	349
Ohio	2	4	4	10	28,435	74	97
Indiana	1	0	2	3	6,898	21	37
Kentucky	7	4	2	13	21,099	43	72
Illinois	12	0	10	22	57,364	216	182
Michigan	7	1	9	17	45,665	83	57
Kansas	12	1	16	29	102,447	166	199
Nebraska, Missouri, Iowa	0	0	0	0	0	6	9
Oklahoma	31	4	13	48	183,034	271	159
Texas:							
North Central	5	2	14	21	61,622	211	132
West	22	0	10	32	161,478	185	155
Panhandle	10	6	1	17	48,336	67	15
Eastern	3	2	1	6	43,670	29	36
Gulf Coast	22	1	10	33	227,630	186	49
Southwest	5	0	6	11	47,223	66	108
Total Texas	67	11	42	120	589,959	744	495
Louisiana:							
Northern	2	4	0	6	32,818	33	28
Southern	16	0	4	20	175,065	76	37
Total Louisiana	18	4	4	26	207,883	109	65
Arkansas	0	0	2	2	12,659	18	19
Mississippi	2	0	2	4	30,382	33	21
Southeastern States	0	0	0	0	0	2	†
Montana	1	1	1	3	5,163	32	27
Wyoming	4	0	1	5	25,522	27	14
Colorado-Utah	0	0	0	0	0	4	3
New Mexico	10	0	4	14	54,317	61	46
California	27	0	6	33	131,876	254	191
Total United States	245	45	157	447	1,662,803	2,752	2,042
Total previous week	253	42	153	448			
Total Feb. 12, 1944	196	41	115	352			

*Includes 38 service wells. †Included in total shown for Mississippi.

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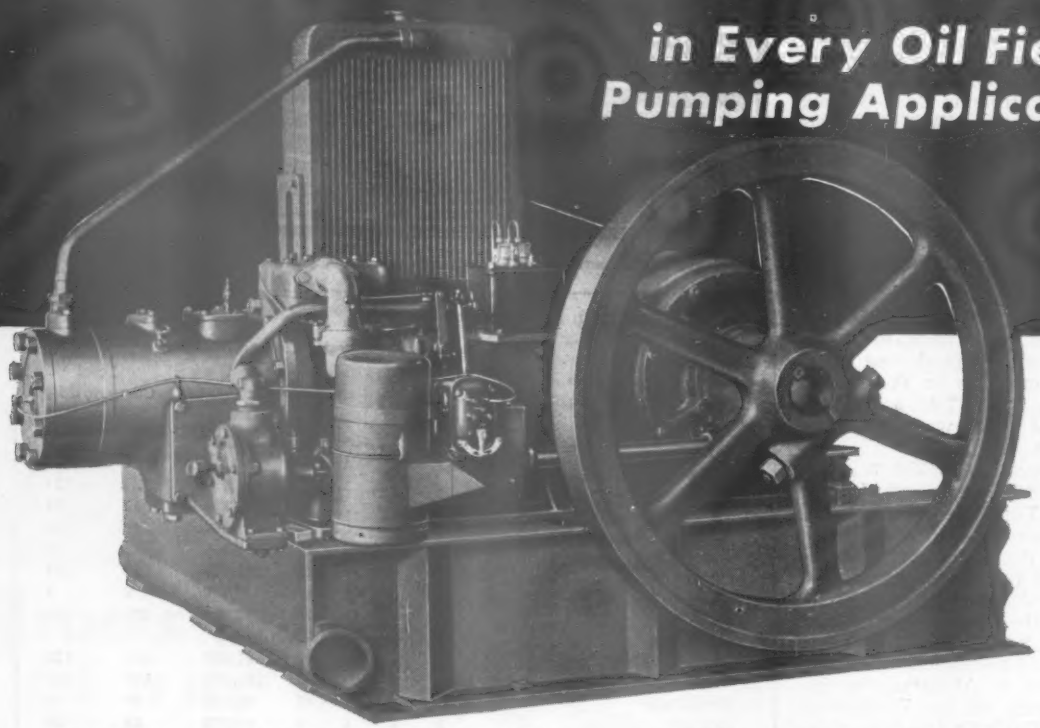
for LOWER PRODUCTION COSTS

in Every Oil Field Pumping Application



TYPE "CM" HORIZONTAL TWO-CYCLE CONVERTIBLE

Bore & Stroke	Fuel	Speed Range	H.P. Gas	H.P. Oil
6½ x 8	Gas or Oil	300-600	18 @ 600	15 @ 600
7¼ x 8	Gas	300-600	22½ @ 600	.....
7½ x 10	Gas or Oil	250-500	25 @ 500	20 @ 500
8½ x 10	Gas	250-500	33 @ 500	.....

Bore & Stroke	Fuel	Speed Range	H.P. Gas	H.P. Oil
10½ x 13	Gas or Oil	200-300	25-38	22-33
11 x 14	Gas or Oil	200-300	30-45	26-40
12 x 15	Gas or Oil	200-300	40-60	35-51
13¼ x 16	Gas or Oil	200-300	50-75	44-66

• These slow-speed, heavy-duty pumping engines run day after day in 24-hour service, efficiently and economically, without expensive shut-down for repairs.

They are sturdy, dependable units, easily accessible for inspection or infrequent repairs.

Skilled labor for operation and maintenance is not necessary as the average field man can service them.

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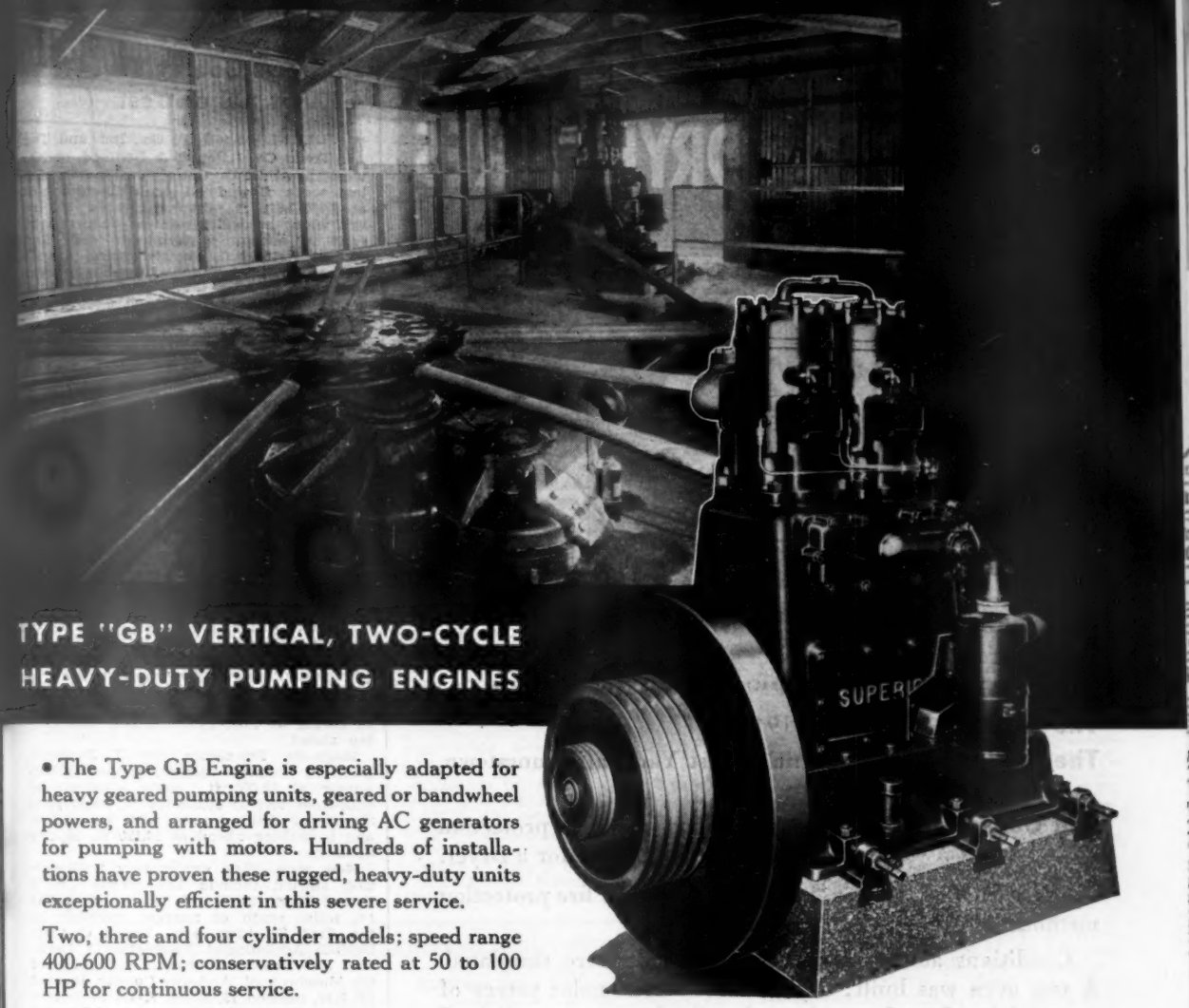
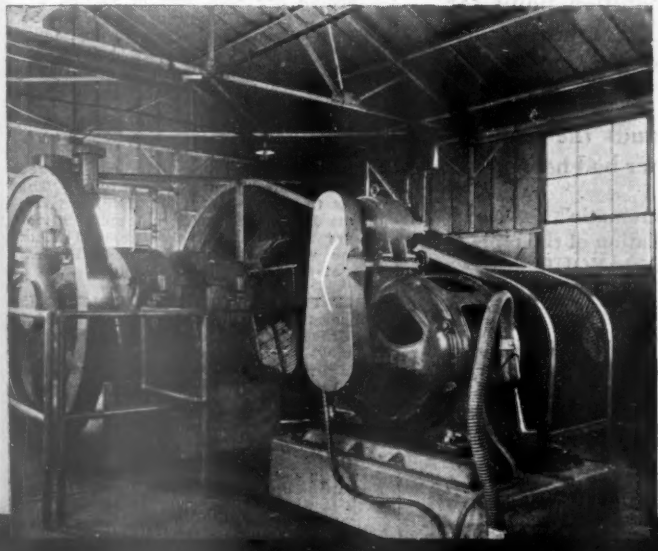


TYPE "GB" VERTICAL, TWO-CYCLE HEAVY-DUTY PUMPING ENGINES

• The Type GB Engine is especially adapted for heavy geared pumping units, geared or bandwheel powers, and arranged for driving AC generators for pumping with motors. Hundreds of installations have proven these rugged, heavy-duty units exceptionally efficient in this severe service.

Two, three and four cylinder models; speed range 400-600 RPM; conservatively rated at 50 to 100 HP for continuous service.



ELECTRIC POWER FOR PUMPING WITH MOTORS

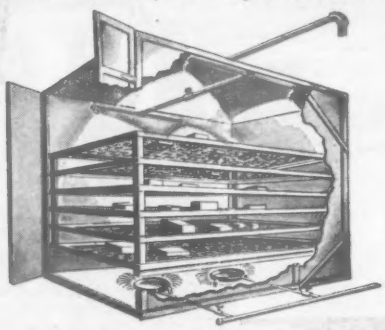
• For oil field central station generator service, Superior Type BTE and CTE Gas Engines combine low investment cost and minimum operating and maintenance expense with maximum efficiency, dependability and long life. The table below shows actual KW capacity of the engines based on rated loads at speeds indicated—not on maximum HP capacity.

Type	Bore & Stroke	No. Cyls.	Fuel	RPM	KW Gas	KW Oil
CTE	13¼ x 16	2	Gas or Oil	275	100	84
BTE	15 x 18	2	Gas	250	125	..

"Automatic" vs. Stubborn

FIRE-FOG DRYER FIRES

-a Fire Test of Interest to Every Manufacturer



Automatic FIRE-FOG ★ IT BLANKETS ★ IT ISOLATES ★ IT QUENCHES ★

The Time: Summer, 1944.

The Place: "Automatic's" Test Yard, at Youngstown, Ohio.

The Occasion: A test to determine the fire protection value provided by FIRE-FOG for a Dryer.

Frankly, FIRE-FOG was "on the spot"—other fire protection methods had failed.

Conditions at the manufacturer's plant were simulated. A test oven was built; drying racks were made; pieces of material distributed over the racks. Gas burners were lighted and the temperature brought up to the ignition point for the material tested and maintained for 15 minutes—*then* FIRE-FOG was introduced into the oven through FIRE-FOG Nozzles.

The result?—in only a matter of seconds the fire was extinguished! And only a few gallons of water had been used!

What has "Automatic" to offer you? "Automatic" service includes test, design, manufacture, and installation of the type of sprinkler system best adapted to extinguish YOUR fires. Write for complete information.

"Automatic"

NOTE: In normal fire-fighting operations FIRE-FOG action is entirely automatic—it blankets . . . isolates . . . quenches—usually in a matter of seconds.

"Automatic" SPRINKLER CORPORATION OF AMERICA

YOUNGSTOWN, OHIO . . . OFFICES IN 31 CITIES

PERMIAN BASIN

Andrews County Test Gets 4,900 Ft. Oil on Test

MIDLAND.—Shell Oil Co., Inc. and The Texas Co. 1 Ratliff & Bedford, southwestern Andrews County wildcat which last week flowed oil on drill-stem test at 7,755-7,844 ft., then recovered 300 ft. salt water in drill pipe, was deepened to 7,862 ft. and on a 60-minute drill-stem test at 7,845-62 ft. showed sweet gas to surface in 20 minutes, flowed oil over crown block after breaking down 900 ft. of drill pipe, and recovered 6,000 ft. of clean oil and 950 ft. of salt water. Hole was then cored to 7,880 ft. and a third drill-stem test was made, from 7,846-80 ft., open 3 hours and 24 minutes. It showed gas in 20 minutes, recovered 4,900 ft. of oil and 2,800 ft. of salt water, and is drilling ahead at 7,906 ft. in lime, believed still in basal Permian.

Sun Oil Co. 1 Martin, Andrews County wildcat in Section 17, Block A-41, recovered 120 ft. of gas-cut mud with slight show of oil on 65-minute drill-stem test at 6,380-6,425 ft., and is drilling below 6,490 ft. A long southeast outpost to the Fullerton field, Frontier Fuel Oil Co. 1-A University showed 270 ft. of mud, no oil or gas, on 90-minute drill-stem test at 7,251-7,363 ft., and drilled ahead. Magnolia Petroleum Co. 1-A Ralph, northwest Fullerton sector deep test, is drilling lime at 9,980 ft.

In Gaines County, Humble Oil & Refining Co. 1 Shell-fee, 1 mile east of Humble 1 Doss 7,200-ft. discovery, recovered lime with broken shows of oil in coring at 7,083-7,101 ft., and was coring ahead.

Magnolia Petroleum Co. 1 Johnson, Lubbock County wildcat, topped Ellenburger at 10,066 ft., made a 45-minute drill-stem test at 10,070-108 ft., recovered 370 ft. of drilling mud with no shows, and is drilling ahead at 10,120 ft. in dry dolomite.

New tests.—New exploratory tests getting started include The Texas Co. 1 Ernest Riggs, Section 8, Block 146, being 1½ miles south of nearest producer in the Fort Stockton pool, Pecos County; DeKalb Agricultural Association 1 Lockhart and Brown, a 4,800-ft. test north of the Mascho pool, Andrews County, located SE NW, Section 15, Block A-42; in Scurry County, Richfield Oil Co. of California will drill 1 C. D. Gribbs, 2 miles east of 1 Dodson dry hole, and in Section 577, Block 97, H&TCRR Survey; Lynn Oil Co. of New Orleans is planning to drill three 3,000-ft. wells in the Garza County area where Kenneth Murchison 1 Post, Section 7, Block 5, K. Aycock Survey, filled 500 ft. with oil from pay at 2,828-40 ft., total depth. Lynn Oil Co.'s lease covers the Post land in the southwest 367 acres of Section 6, same block.

An Ordovician failure has been marked against northern Ector County by The Texas Co. et al 1 Cowden, 3 miles south of the Embar field. After topping Ellenburger at 8,705 ft. it showed 8,170 ft. of sulfur water on a 90-minute drill-stem test at 8,700-24 ft., total depth.

WEST TEXAS WILDCAT COMPLETIONS

Andrews County: Anderson & Prichard 1 University, Sec. 30, Blk. 1, Univ. lands, elev. 3,097 ft., dry, TD 5,085 ft.

Phillips 4-H Tex-Univ., Sec. 47, Blk. 9, Univ. lands, N of No. Cowden pool, elev. 3,104 ft., dry, TD 4,691 ft.

Crockett County: Watchorn Oil & Gas 3 George L. Thompson, Sec. 73, Blk. 1, I&GN Sur., elev. 2,275 ft., dry, TD 1,376 ft.

Howard County: Herman Brown et al 1-B J. C. Caldwell, Sec. 32, Blk. 32, T&P Sur., 18 mi. NW Big Spring, elev. 2,639 ft., dry, TD 6,700 ft.

Mitchell County: Hickock & Reynolds 1

T. L. McKenney, Sec. 30, Blk. 28, T-1-N, T&P Sur., 4 mi. NE Iataan, elev. 2,168 ft., dry, TD 3,232 ft.

Reagan County: Superior and Wiggins & Hyde B-1-A University, Sec. 12, Blk. 1, Univ. lands, 5 mi. S Big Lake field, elev. 2,953 ft., Wolfcamp 7,300 ft., Ellenburger 10,060 ft., dry, TD 10,263 ft.

TEXAS PANHANDLE

AMARILLO.—A shallow wildcat test in Collingsworth County has cemented casing to test small shows found in drilling to total depth of 2,192 ft. C. W. and Wm. L. Snoddy 1 R. Wischkaemper, NW NW SW Section 63, Block 16, H&GN Ry. Survey, had small shows of gas at 1,550 ft. and 2,005-20 ft., and slight show of oil and water at 2,075-93 ft., two bailers of water per hour at 2,093-95 ft., small show of oil 2,159-70 ft. Total depth is 2,192 ft. in granite wash, with 7-in. pipe cemented at 2,158 ft.

PANHANDLE WILDCAT COMPLETION

Donley County: Stanolind 1 Lavis, Sec. 81, Blk. 3, T&P Sur., 14½ mi. N Hedley, elev. 2,538 ft., dry, TD 4,092 ft.

SOUTHEASTERN NEW MEXICO

HOBBS.—The Texas Co. 1 Eaves, Lea County wildcat 14 miles north of Hobbs, in Section 26-16-38, cored 5,374-92 ft., recovered 8 ft. of dolomite with scattered stains and odor of oil and is making a drill-stem test. This show is in San Andres (Permian) lime reported topped at 5,030 ft. Ohio Oil Co. 1 Jones, 7 miles southeast of Hobbs, in Section 19-19-39, failed on three attempted drill-stem tests at 7,488-7,619 ft., total depth, and has moved off rotary tools, although it is reported that Stanolind Oil & Gas Co. may take over the hole and deepen it to 10,000 ft.

Gulf Oil Corp. 1 Gutman, north offset to its 1 Drinkard lower Permian discovery, Section 19-22-38, logged first stains at 6,392 ft., cored 6,435-42 ft., recovered 2 ft. of porous, saturated dolomite, logged dolomite with stains in spots from 6,442-68 ft., drilled ahead below 6,604 ft. in lime.

Samedan Oil Corp. 1 Boyd is a new deep wildcat scheduled to test lower Permian in the Penrose-Skelly field, contracted to 6,500 ft., located NW SE, Section 23-22-27. C. M. Pearce 1 Cities Service-State is a new 4,500-ft. wildcat in NE SW, Section 31-16-33. Atlantic Refining Co. 1 Stephens, wildcat in Section 33-14-33, is dry at total depth 8,245 ft. in shale.

SOUTHEASTERN NEW MEGICO WILDCAT COMPLETION

Lea County: Texas 1 A. G. State, Sec. 29-16s-34e, 2 mi. N Vacuum pool, elev. 4,137 ft., Glorietta 5,990 ft., dry, TD 7,520 ft.

SOUTH LOUISIANA

Deep Condensate Pay In North Cankton Pool

NEW ORLEANS.—Danciger Oil & Refining Co. 1 Pothier, 12-8s-3e, in North Cankton field, St. Landry Parish, is completed in new deep sand through perforations at 10,052-64 ft., flowing 113 bbl. daily of 65°-gravity condensate through 10/64-in. choke, gas-oil ratio 16,020, tubing pressure 3,500 lb., shut-in tubing pressure 3,850 lb. Originally completed in the shallow Pothier gas sand in perforations at 2,790-97 ft. as a gas well, the well started showing salt water and perforations were squeezed and completion made in the deeper sand. Total depth of this well is 10,255 ft. in shale, with 5½-in. casing set to 10,150 ft.

Union Sulphur Co. 1-A Andrus unit, 50-8s-2e, Branch field, Acadia Parish, is completed as gas-condensate producer, from perforations at 11,090-94 ft., flowing 156 bbl. daily through ½-in. choke, 45° gravity, tubing pressure 6,300 lb., gas-oil ratio 14,000, total depth 11,947 ft., with 5-in. liner set to 11,697 ft.

Stanolind Oil & Gas Co. 1 Tupper, 29-7s-3w, in South Elton field, Jefferson Davis Parish, is drilling at 8,589 ft. in shale. This test picked up oil at 8,073-85 ft. and on drill-stem test from 8,070-87 ft., recovered 24 stands of 37.4°-gravity oil.

Shell Oil Co. 5 Federal Land Bank, 38-12s-15e, in LaPice field, St. James Parish, is drilling at 9,475 ft. in hard shale. Sand showing oil was reported at 7,028-39 ft.

SOUTH LOUISIANA WILDCAT COMPLETION

Acadia Parish: Union Sulphur and Magnolia 1 Medlenka, Iota area discovery, Sec. 11-8s-2w, top sand 9,380-90 ft., TD 9,692 ft., perforations 9,380-90 ft., PT 215 bbl. per day through ⅛-in. choke, gas-oil ratio 330, tubing pressure 1,175 lb., gravity 32°, 8 per cent salt water.

TEXAS GULF COAST

Tyler County Wildcat Flows 43°-Gravity Oil

HOUSTON.—Atlantic Refining Co. 1 Houston-American, Tyleh County wildcat, flowed 8 to 10 bbl. of 43.3°-gravity oil per hour, 5 per cent water, 2,100 lb. working pressure, on drill-stem test on first squeeze job at 8,390-95 ft. Now waiting on cement to set after re-squeezing at 8,390-95 ft.

Shell Oil Co. opened a new Wilcox producing area on the old Livingston field dome in Polk County, at the 6 Dick & Failing, flowing 600 bbl. daily on ¼-in. choke, gas-oil ratio 404, tubing pressure 800 lb., casing pressure 950 lb., gravity 36°, 0.2 per cent water. This test failed in the Sparta, was carried on down to total depth 7,036 ft., plugged back and completed in sand topped at 6,566 ft. Perforations are at 6,562-70 ft. The company requested a new field allowable for this new Wilcox sand producer.

ElTex, Ltd., 3 E. L. Bender estate, second producer for the Spring field of Harris County, flowed a Railroad Commission potential of 210.08 bbl. daily through 10/64-in. choke, tubing pressure 1,500 lb., casing pressure 2,200 lb., gravity 41.3°, 0.1 per cent water, gas-oil ratio 1,300. Production is from perforations in the Cockfield sand at 6,241-6,245 ft. Total depth is 6,247 ft., with 7-in. casing set on bottom. Top of pay was at 6,230 ft., including 4 ft. of gas cap. Cockfield was topped at 6,004 ft.

ElTex, Ltd. has applied for permit to drill 1 Bridget Kelly Walton, in Wiley Smith Survey, northeast of the 3 Bender estate well, Spring field, Harris County.

Standard Oil Co. of Texas 1-110 State, northwest extension to Smith Point field, Chambers County, is completed flowing 248 bbl. daily on ½-in. choke from perforations at 8,126-32 ft. Total depth is 8,224 ft., with 7-in. casing set at 8,223 ft., and 2½-in. at 8,127 ft. Gravity is 40.9°, tubing pressure 1,400 lb.

Navarro Oil Co. is running squeeze job at the 1 Foster Lumber Co., prospective Wilcox sand discovery well in San Jacinto County, before perforating for production test in the 7,900-ft. sand. Pipe was perforated with 23 shots at 7,925-30 ft. for the squeeze job. Total depth is 7,960 ft. with 5½-in. casing set on bottom. Drill-stem test at 7,900-07 ft. had recovered oil, and oil was recovered on drill-stem test at 7,905-12 ft. with no water. Drill-stem test at 7,928-35 ft., prior to setting casing had recovered 36.5°-gravity oil and salt water.

American Republics and Houston Oil Co. of Texas 3 H&TC-fee, south offset to the discovery well at Beech Creek field in Hardin County, is flowing 11 bbl. an hour through 5/32-in. choke on production test in perforations at 6,272-75 ft., tubing pressure 1,350 lb., gravity 34.3°. Total depth is 7,555 ft., with 5½-in. casing at 6,570 ft. Cockfield sand was reported at 6,272-82 ft.

UPPER GULF COAST WILDCAT COMPLETION

Brazoria County: Gulf 2 S. M. Allen et al, Allen dome, Sterling McNeil Sur., Abstract 94, dry at 12,667 ft.

DAILY AVERAGE PRODUCTION FOR WEEK

	Feb. 10 crude oil	Distillate, allied products	February PAW quota all oils	Feb. 3 crude oil
Alabama	250	.....	300	300
Arkansas	81,600	5,200	85,200	81,550
California	898,250	58,000	951,800	897,550
Colorado	9,400	.....	9,500	9,750
Eastern	58,050	8,700	76,900	63,300
Illinois	204,600	12,000	210,000	196,800
Indiana	13,100	.....	12,000	13,300
Kansas	252,800	5,000	279,000	257,400
Kentucky	30,200	3,800	35,800	30,200
Louisiana	357,450	37,000	397,000	357,500
North Louisiana	68,250	.....	.....	68,300
South Louisiana	289,200	.....	.....	289,200
Michigan	46,700	850	47,850	46,800
Mississippi	46,800	.....	53,000	48,150
Montana	22,300	300	23,300	22,350
Nebraska	950	.....	1,000	950
New Mexico	103,250	5,100	110,100	103,050
Oklahoma	363,550	28,500	388,500	363,800
Texas	2,141,450	150,000	2,290,000	2,149,450
East Texas	392,000	.....	.....	400,000
East Central Texas	144,050	.....	.....	144,050
North Central Texas	143,150	.....	.....	143,150
Texas Panhandle	88,700	.....	.....	88,700
West Texas	478,600	.....	.....	478,600
South Central (S. A.)	20,050	.....	.....	20,050
South Texas (Laredo)	78,400	.....	.....	78,400
Lower Gulf Coast	243,900	.....	.....	243,900
Upper Gulf Coast	552,600	.....	.....	552,600
Wyoming	91,500	3,600	103,600	91,100
Total United States	4,720,750	318,050	5,074,850	4,733,300
Change from previous week	down 12,550			
Total production January 1-February 10, 1945				193,403,400 bbl.
Same period last year				179,880,755 bbl.

KANSAS

New Rush County Pool Flows 40 Bbl. Per Hour

RUSH County has been given a new pool by the Inland Oil Co. 1 Peterson, SE SE SW 35-19-16w, a wildcat two miles north of the Pawnee Rock pool of Pawnee County. Pipe was set at 3,765 ft., and perforations were made at 3,735-37 ft. The hole filled with oil and the well flowed an estimated 40 bbl. per hour into pits for two hours. Operators are running tubing. Tops were Topeka 2,981 ft., Lansing 3,395 ft., and Arbuckle 3,656 ft.

Ellis County: Max Cohen et al 2 Madden estate, NW SW NE 4-13-17w, topped the Arbuckle at 3,573 ft., with a show of oil, and hole was taken to 3,605 ft. Casing has been set on top of the Arbuckle, and a pumping unit is being set up. This well is the offset to the discovery well of the new Catherine, Northwest pool, opened by the Max Cohen 1 Madden estate.

McPherson County: P. G. Reynolds et al 1 Koehn, NW NW NW 13-20-2w, about 1 mile south of the Ritz-Canton pool, has hit gas in commercial quantities after perforating at 2,967-71 ft. The chat was cut at 2,927 ft., and at 2,980 ft., both oil and water were logged.

Saline County: Mouser Drilling Co. 1 Carlin estate has been staked at NE NE NE 23-15-3w, 1 mile north of the discovery well of the new Mentor pool, opened by Mouser Drilling 1 Carlin.

KANSAS WILDCAT COMPLETIONS

Barton County: Helmerich & Payne 1 Snyder, SW SW SW 18-18-14w, dry, TD 3,731 ft., Arbuckle 3,522 ft., Basal sand 3,726 ft.

Stanolind 1 Radke, NE NW NW 6-16-14w, dry, TD 3,457 ft., Arbuckle 3,413 ft.

Douglas County: J. M. Huber 1 Community, NW NW NW 33-12-20e, 100,000 cu. ft. gas from pay zone at 674-694 ft., TD 1,813 ft., Squirrel sand 670 ft., Mississippi 1,089 ft., Devonian 1,557 ft., Viola 1,630 ft., St. Peter 1,735 ft., Arbuckle 1,797 ft.

Ellis County: Max Cohen 1 Madden, NW NW NE 4-13-17w, pump potential of 106 bbl. of 28°-gravity oil from pay zone 3,581-3,614 ft., TD 3,614 ft., Kansas City 3,324 ft., Arbuckle 3,582 ft.

Ford County: Texas 1 Thomas, SE NE NW 33-27-23w, dry, TD 6,152 ft., Arbuckle 5,917 ft.

Graham County: D. J. Hansen 1 Hansen "B", SE SE SE 23-6-21w, dry, TD 3,810 ft., Arbuckle 3,760 ft.

Pawnee County: J. M. Huber 1 Galliart, NE NE NE 31-22-15w, dry, TD 4,042 ft., Arbuckle 4,031 ft.

Phillips County: Skelly 1 Thayer, SE SE NE 34-5-19w, dry, TD 3,503 ft., Arbuckle 3,480 ft.

Pratt County: Paul Hatfield 1 Bryant, NE SW SE 31-27-15w, dry, TD 5,000 ft., Arbuckle 4,946 ft.

Rice County: Mid-States and Ingling 1 Kasperek, SW SW NW 13-18-6w, dry, TD 4,003 ft., Arbuckle 3,966 ft.

Russell County: Coralena 1 Alley, SE SW NE 29-14-15w, dry, TD 3,294 ft., Arbuckle 3,282 ft.

FOREST CITY BASIN

ST. JOSEPH.—United States Bureau of Mines 1 Oliver, SW SW 29-22n-11e, New Madrid County, Missouri, a test of a magnetic anomaly in southeast Missouri, is drilling below 2,900 ft. A depth of 4,000 to 5,000 ft. is proposed. M. H. Marr et al 1 Barnett, SW SW 3-25n-11e, Stoddard County, was drilling below 2,900 ft.

One northeast Kansas test is reported, Dan McLaughlin 1 Allen, NW NE 32-8s-16e, Jackson County. Eight-inch pipe was set at 1,810 ft. and the test is drilling at 1,835 ft.

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MICHIGAN

Deep River-Arenac Area Gets a Gusher

SAGINAW.—Another Deep River-Arenac gusher, heavy producers in Adams-Arenac and Chippewa-Mecosta, a wildcat completion in Montcalm County and three other crude producers combined for an 8,000-bbl. daily potential development last week in Michigan oil fields. Other operations included nine dry holes, six of them wildcats, and a small gas well.

The wildcat producer, marred by salt water, rated 250 bbl. a day in Cato Township, Montcalm County. The Deep River gusher, Gordon Oil Co. 2 Weber, Section 7, came in for 225 bbl. an hour. The new Adams and Mecosta producers topped 50 bbl. an hour initial.

The state conservation department issued five new drilling permits, one more for Deep River, one for Adams, one each for locations in Allegan, Ottawa and Tuscola counties, and announced its 1944 production compilation. The report said natural-gas production reached an all-time high—21,253,903,000 cu. ft., compared with 19,581,420,000 in 1943, while crude-oil production dropped to 18,489,470 bbl. last year; in 1943 it was 20,767,724 bbl.

MICHIGAN WILDCAT COMPLETIONS

Midland County, Homer Township: J. V. Wicklund Development Co. 1 Harry R. Wetherell, NW SE NE 15-14n-1e, dry in Dundee, TD 3,854 ft.

Montcalm County, Bloomer Township: Clifford A. Perry 1 George A. Kohn, SE SW NE Sec. 30, dry in Alpena formation, TD 2,759 ft.

Cato Township: Gordon Oil Co. 1 Paul Paris, SE NW NW 6-12n-8w, 240 bbl. natural, with salt water, in Monroe, TD 3,604 ft.

Sidney Township: Columbia Oil & Gas Co. 2 Playmor Executives Club, NE NE NE 13-10n-7w, dry in Monroe, TD 3,330 ft.

Oceana County, Crystal Township: Fisher-McCall Oil & Gas, Inc. 1 Linda Bahr, NW NW NE 6-16n-16w, dry in Traverse limestone, TD 1,737 ft.

Newyfield Township: Skelly Oil Co. 1 Joe VanderLeest, SW SW SW 28-14n-15w, dry in Dundee, TD 2,737 ft.

Wexford County, Antioch Township: Ranch Oil Co. 1 L. Browning et al, S½ SE SE 11-23n-11w, dry in Dundee, TD 3,210 ft.

SOUTHWEST TEXAS

Good Drill-Stem Tests For Bee County Wildcat

CORPUS CHRISTI.—Fred W. Shield 1 J. L. Courtney, wildcat, Tulsita townsite, in Bee County, recovered 1,400 ft. of 31.8°-gravity oil and 30 ft. mud, no water, on 16-minute drill-stem test at 7,030-42 ft. through ¼-in. chokes, 117 lb. working pressure; recovered 1,300 ft. oil, 30 ft. oily mud and 30 ft. muddy water on drill-stem test in Slick sand at 7,042-45 ft.; recovered 1,500 ft. of oil on drill-stem test at 7,048-58 ft. and on drill-stem test at 7,058-64 ft. recovered 350 ft. oil, 46 lb. top pressure in 15 minutes. Slick sand was topped at 7,013 ft. Well is now drilling ahead.

M. M. Miller & Sons 1 George Herberger, wildcat, 9 miles south of Benavides, in Duval County, recovered 150 ft. of oil, and 120 ft. of salt water on drill-stem test of perforations at 5,145-48 ft., using ¼-in. chokes, 1,500 lb. working pressure. Perforations were squeezed, now waiting on cement to set. Total depth of the hole is 5,960 ft.

Edwin M. Jones 5-B M. A. Evetts, North Magnolia City field, in Jim Wells County, flowed 20 bbl. an hour for 3 hours on drill-stem test of perforations at 5,423-27 ft. using ¼-in. and ⅜-in. chokes, working pressure 650 lb. Operators ran tubing and are now cleaning. This well was originally drilled and abandoned in January 1944 at total depth of 5,510 ft.

Continental Oil 1 Kittie West Schreiner, wildcat, 5 miles south of Kittie, in Live Oak County, flowed 11 bbl. of 43.1°-gravity oil in 16 hours, 45 per cent salt water, 10/64-in. choke, tubing pressure 2,100 lb., gas-oil ratio 100,000, from perforations at 6,810-20 ft. These perforations were squeezed and operators reperforated 6,820-24 ft. Now preparing to swab. Total depth is 7,614 ft. with 5½-in. casing set on bottom.

SOUTHWEST TEXAS WILDCAT COMPLETIONS

Brooks County: Texas 2 Mary M. Lasater, "Loma Blanca" Francisco Guerra Chapa grant, Sec. 6, 4½ mi. southeast of Falfurrias, dry at 8,300 ft.

LaSalle County: W. C. McBride 1 Mrs. Loma Pugh et al, E. L. Garrett Sur. 93, 22 mi. northwest of Freer, dry at 843 ft.

San Patricio County: Henshaw Bros. and Coastal Refineries 1 Florence B. Haworth, O'Connor Ranch, Section 30, 4 mi. northeast of Edroy, dry at 6,415 ft.

Starr County: George H. Echols 2-A Starr County Cattle Co., Porcion 89, Block 38, Jeffries subd., 12 mi. northeast of Rio Grande City, dry at 3,110 ft.

Victoria County: Wright Drilling 1 E. B. Furhman, Valentine Garcia League 45, 10 mi. west of Edna, dry at 5,833 ft.

Webb County: Phillips 1-B A. M. Bruni estate, J. V. Borrego grant, approx. 10 mi. southwest of Aguilares, dry at 5,310 ft.

CANADIAN FIELDS

North Turner Valley Gets New Producer

CHATHAM.—In the North Turner Valley extension, Foothills Oil & Gas Co., LSD 14, 4-21-3w5, bottoming at 8,568 ft., with first Madison contact at 6,763 ft., made around 700 bbl. after second acid treatment.

Brazeau.—A test expected to get the Devonian limestone at shallow depth has been spotted by Russell V. Johnson, geologist for South Brazeau Petroleums, Ltd., in the Brazeau area of the northern foothills, in SE 35-39-14w5. Drilling will start with heavy cable-tool rig in the Banff shale with Devonian contact looked for at 800 ft. and first porosity at 1,000 ft. Location is south and west of Shunda Oils 1, LSD 36-40-15w5, drilling below 941 ft., and Arrow-Brazeau 1, LSD 5, 9-41-15w5, rigged up.

Conrad.—In the Conrad field, southern Alberta, Conrad-Province 75-36-C, LSD 12, 36-4-15w4, drilled by California Standard, finished at 3,040 ft., was noncommercial in the Ellis sand. Conrad-Province 55-33-B, LSD 11, 33-5-15w4, is testing at 3,234 ft., with production from the Ellis indicated. Conrad-Province 75-32-B is spotted in LSD 12, 32-5-15w4.

Bullshead.—In the Bullshead area, southern Alberta, McColl Frontenac-British Dominion 14-34-8-7, LSD 14, 34-8-7w4, total depth 4,763 ft., is dry. Noncommercial oil showing with water was found in the Devonian limestone. A new joint test has been located on the Eldon prospect near Pakowki Lake in SLD 9, 29-6-7w4.

Lloydminister.—In the Lloydminister field, eastern Alberta, Silverdale 1, LSD

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10, 12-4S-1w4, total depth 1,901 ft., made around 50 bbl. a day of 14°-gravity crude on the pump.

ILLINOIS

Effingham and Edwards Tests Looked Encouraging

CENTRALIA.—Two outposts, one in Edwards, the other in Effingham County, were showing encouragingly. The Edwards County test, Aetna Oil Co., Bob Hays and George & Wrather Drilling Co. 1 Greathouse, SW NE NW 23-1n-10e, was drilling close to the McClosky lime at 3,250 ft., after having found upper formation higher than in other wells in the township. It is 2 miles from production. In the Effingham County test Waggoner and others 1 M. Wood, SE SW SE 28-6n-7e, was about to make a production test of McClosky lime at 2,863-67 ft., TD 2,868 ft. A drill-stem test got gas in 5 minutes and flowed in 18 minutes. It was expected to extend the Bible Grove pool and to make the best McClosky lime well in the pool.

No pools were opened in January, but four pool extensions were made, and a new pay, the Aux Vases, was discovered in the Woodlawn pool in Jefferson County. The pools extended were Iola in Clay County; King in Jefferson, Noble in Richland and Marine in Madison.

Only 22 wells were reported completed in Illinois during the week in review. Twelve were oil wells producing an aggregate initial of 1,398 bbl. of oil. Five dry-hole wildcats were completed.

The largest new well of the week was Lario Oil & Gas Co. 1 J. S. Weber, SW NW SE 7-1n-10e, in the Bennington pool, Edwards County. Producing from McClosky lime at 3,228-38 ft., total depth 3,245 ft., it flowed 450 bbl. in 24 hours through ⅜-in. choke.

Twenty-three new operations were started during the week, including the following wildcats: Pure Oil Co. 1 E. M. Hill, NE SE NE 14-3n-9e, Richland County; H. H. Weinert 1 Kisner, SW NE SE 31-5s-9e, and Gordon Liquor Co. 1 C. Hon, NE NE SW 33-3s-10e, White County; Tide Water Associated Oil Co. 1 W. B. Johnson, SE SE NW 33-6s-5e, Hamilton County, and H. Luttrell 1 Hageman, NW NW NE 10-2n-6w, St. Clair County.

ILLINOIS WILDCAT COMPLETIONS

Effingham County: W. O. Schock et al 1 Schmoke, NE SE SE 10-7n-5e, dry at 2,461 ft. Menard 1,658 ft., Cypress 2,020 ft., Benoist 2,173 ft., Aux Vases 2,230 ft., McClosky 2,228 ft., St. Louis 2,458 ft.

Clay County: Pure 1 C. B. Moseley B, SW SE SW 11-2n-8e, dry at 3,144 ft. Glen Dean 2,451 ft., Barlow 2,616 ft., Renault 2,914 ft., Ste. Genevieve 2,987 ft.

Franklin County: Nash Redwine 1 Franklin County Mining, NW NE SE 11-7s-4e, dry at 3,362 ft. Menard 2,328 ft., Cypress 2,942 ft., Aux Vases 3,160 and 3,182 ft., Ste. Genevieve 3,216 ft., Fredonia 3,302 ft.

Hamilton County: National Associated Producers 1 William Good, SE NE NE 20-3s-6e, dry at 3,494 ft. Menard 2,460 ft., Cypress 3,004 ft., Benoist 3,204 ft., Aux Vases 3,264 ft., McClosky 3,393 ft.

Madison County: A. J. Slagter 1 M. C. Holtman, dry at 1,800 ft. Ste. Genevieve 857 ft., Chattanooga 1,672 ft., Devonian 1,742 ft. One-hour drill-stem test recovered 15 ft. of mud and no oil showing.

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APPALACHIAN FIELD

Crook District Wildcat Dry Through Oriskany

PITTSBURGH.—In Crook district, Boone County, West Virginia, United Producing Co. drilled the deep wildcat 1,181 Donald D. Shepard through the Oriskany sand which is void of any showing. From a surface elevation of 1,072 ft., the Big lime was logged at 2,125 ft., Berea at 2,973 ft., Corniferous lime at 5,460 ft., Oriskany at 5,528-65 ft., now drilling in dark lime at 5,573 ft.

In this district, Hope Natural Gas Co. is completing 8,912 Loup Creek Colliery Co. with the Maxton sand at 2,128-57 ft. and 130,000 cu. ft. of gas. It was shot at 2,144-57 ft. with 30 qt. with an increase to 492,000 cu. ft. from total depth 2,212 ft.

In Wyoming County, Hope Natural Gas Co. is completing 8,952 N. R. & P. Consolidated Coal Co. in Baileyville district after shooting at 986-1,018 ft. with 60 qt. and at 1,067-75 ft. with 30 qt. The final gage before cleaning out is 220,000 cu. ft. gas with a total depth of 1,260 ft.

In Center district, Wyoming County, this company drilled 8,908 same lease through the Injun sand without sufficient pays in the Big lime or Injun sand and plugged it back to shoot the Ravenscliff at 1,190-1,277 ft. which has a gas pay of about 30,000 cu. ft.

In Scott district, Putnam County, Godfrey L. Cabot, Inc., drilled 1,162 Summers-Quarrier to 4,695 ft. through the Oriskany sand which showed a volume of 63,000 cu. ft. gas and plugged it back to 4,046 ft. and shot the shale. After shot, it gaged 246,000 cu. ft. gas with a rock of 820 lb. in 18 hours. The Berea was at 2,374-2,400 ft., Corniferous lime at 4,583

ft., Oriskany at 4,665-76 ft., shot 1,350 lb. gelatin.

In southwest Pennsylvania, none of the wildcat wells reported important markers.

CALIFORNIA

Kern County May Have New Discovery

LOS ANGELES.—General Petroleum Corp. appears to have discovered a new field northwest of the Fruitvale field in Kern County although this will not be finally decided until its 86-16 Kernlandia, in Section 16-29s-27e, is put on production. A formation test at 3,898-3,906 ft. and 3,908-3,910 ft. resulted in a recovery of 55 stands of oil and gassy mud on a short test. The relatively small amount of gas indicates the probable necessity to install pumping equipment. This well was drilled to 8,117 ft. but then plugged back to 4,000 ft. A few weeks ago it pumped about 45 bbl. of 13°-gravity oil cutting 95 per cent water. In Section 1-29s-26e, General Petroleum's 1-44 Kernway was given a 70-minute formation test at 4,579-4,609 ft. Gas hit the surface in 2 minutes and showed a steady but small blow for 20 minutes. Recovery was 1,738 ft. of gassy oil, 415 ft. of gassy oil and mud and 2,380 ft. of gassy salt water. These two wells are on a northwest-southeast trend.

At Amerada Petroleum Corp.'s Brawley wildcat in Imperial Valley circulating fluid on the ditch tests 180° F. At 4,000 ft. this water has tested 264° and with the bottom of the hole below 4,250 ft. the temperature is somewhat higher and is the highest recorded in many years in a drilling well.

Wildcat mortality has been especially high during the past several weeks, and several that showed some encouragement failed to show anything of importance. In the North Strand area, Standard Oil Co. of California's 23-41 Kern County land, was dry, as was the company's 1 Notz in the Belridge-Buttonwillow district. In the Bellevue field of Kern County, Standard's 25-35 Robbins was dry at 6,809 ft. and at Beardsley, Shell Oil Co., Inc.'s 1 Kern County land was dry at 6,801 ft. Standard's Semitropic wildcat in Section 25-27s-23e, which showed some encouragement at 3,880-90 ft., failed to show a sustained flow and was dry at 14,770 ft. Three Standard dry holes in the Honker-Suisun district during the past few weeks makes this a costly area in which to wildcat or drill outpost wells.

Drilling operations have shown a slight increase in the Buena Vista Hills field of Kern County. Upon conclusion of the development program at Elk Hills several of the rigs now in operation there may be moved over into the Buena Vista Hills area. A small amount of drilling may be necessary to maintain production at 65,000 bbl. daily at Elk Hills after that goal is reached but with 20 strings of tools in operation a reduction in the number of rigs can be expected.

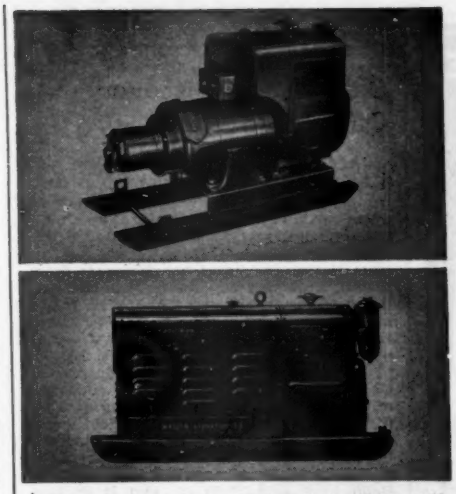
CALIFORNIA WILDCAT COMPLETIONS

Kern County, Beardsley wildcat district: Shell 1 K.C.L., 24-29s-27e, bailed dry, had small showing of 18°-gravity oil but not commercial, dry, TD 3,273 ft.

Los Angeles County, Chatsworth wildcat district: Shell 1 Schonfeld, 30-3n-16w, bottomed in hard gray sand, no important showings, dry, TD 5,162 ft.

Fresno County, Jacalitos wildcat district: Texas 22-18 Caribou-Record, 18-21s-18e, bottomed in barren Miocene sand, no important showings, dry, TD 2,465 ft.

Kern County, Strand wildcat district: Standard 23-41 Kern County land, 6-30s-26e, bottomed in hard gray sand, Stevens sand of Miocene age, 8,330 ft., was barren, no important showings, dry, TD 9,996 ft.



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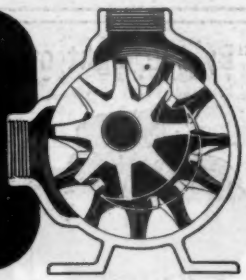

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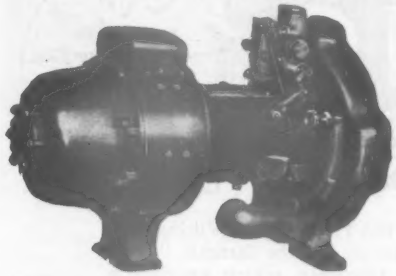

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N. CENTRAL TEXAS

Clay County Discovery Offset to Be Tested

DALLAS.—Anderson-Prichard Oil Corp. 1-B R. O. Wood, east offset to same company's 1-A Wood recent discovery 10 miles northwest of Henrietta, Clay County, has cemented casing at total depth 6,270 ft. and will perforate to test. A drill-stem test on saturated conglomerate from 5,986-92 ft., open 30 minutes, showed gas in 10 minutes and recovered 216 ft. of oil and 30 ft. of oily mud, while a later test, on conglomerate at 6,059-73 ft., also open 30 minutes, recovered only 150 ft. of salty gas-cut mud. Consolidated Oil Co. et al 1 Schulz & Myers, wildcat 5 miles northwest of Joy, is drilling at 5,271 ft. in shale. In the Ringgold field area, Barnsdall Oil Corp. 1 Stine, Section 24, Block 4, H&TCRR Sur., recoverd 5,000 ft. of salt water on drill-stem test of Bend lime at 5,621-39 ft., and is drilling ahead below 5,745 ft.

Cooke County.—Nearly a mile north of Walnut Bend field, The Texas Co. 2 Gainesville National Bank topped lime at 5,298 ft., recovered only 30 ft. of mud. A drill-stem test was taken at 5,420-70 ft., then well was drilled to 5,505 ft. and is testing again. It offsets a good Ellenburger producer with pay at 5,374-5,485 ft. Sun Oil Co. 1 Butler, Sivels Bend field, is drilling below 6,100 ft. and is expected to reach its Strawn sand objective around 6,700 ft. G. E. Kadane & Sons 1 W. L. Parker is a new shallow wildcat test 9 miles south of Muenster, in southwest corner of G. Yarbrough Survey A-1,175, contracted to 1,450 ft.

Pure Oil Co. 1 Little, prospective Grayson County deep Ordovician discovery, continues fishing for drill pipe at total depth of 9,532 ft. in dolomite. A. L. Andree et al 1-A Whiting, north of Bells, was dry at total depth 3,308 ft.

James Stewart & Co., Inc. 1 J. W. Thorpe, Section 3,007, TE&L Survey, about 7 miles northeast of Throckmorton, Throckmorton County, used 1,000 gal. acid through perforations at 4,260-70 ft., opposite Caddo lime, then pumped 171 bbl. oil in 24 hours.

W. H. Hammon 1 H. W. Bryan is a new 6,000-ft. wildcat location 11 miles northeast of Wichita Falls, and in Clay County, 660 ft. out from northeast corner of Mary Sims Survey No. 1, A-972.

NORTH CENTRAL TEXAS WILDCAT COMPLETIONS

Cooke County: Sam Y. Dorfman 1 Hubert Felderhoff, C. Underwood Sur. A-1072, 2 mi. SW Myra, elev. 888 ft., dry, TD 1,980 ft.

G. E. Kadane & Sons 1 Emma J. Coursey, W. F. Shaw Sur. A-1307, elev. 1,052 ft., schist 2,960 ft., dry, TD 2,962 ft.

G. E. Kadane & Sons 1 F. X. Hacker, D. W. Donnell Sur. A1477, 1½ mi. SE Freemond, dry, TD 4,053 ft.

King County: Shamrock Oil & Gas 2 Masterson, Blk. A, R. M. Thompson Sur. A-497, elev. 1,779 ft., Strawn 5,350 ft., Mississippian 6,150 ft., dry, TD 6,180 ft.

WEST CENTRAL TEXAS WILDCAT COMPLETIONS

Coleman County: Sohio 1 G. O. Cresswell, Sec. 76, Blk. E-2, GH&H Sur., 6 mi. NE Novice, elev. 1,737 ft., Caddo 3,500 ft., dry, TD 3,607 ft.

Johnson County: J. C. Vernon and W. A. Dial 1 H. B. Van Zandt, Urbano Mendoza Sur. A-543, 5 mi. SE Cleburne, elev. 620 ft., Strawn 4,930 ft., dry, TD 5,903 ft.

Jones County: W. D. Brookover and H. R. Burden 1 Etta Brinkley, Sec. 11, Blk. 15, T&P Sur., 4 mi. N. Hawley, elev.

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1,733 ft., King 2,458 ft., Swastika 2,481 ft., dry, TD 2,615 ft.

R. H. Roark and L. F. Hooker et al 1 F. J. McDonald, subd. 75, DeWitt CSL No. 125, 2 mi. NW Stith, elev. 1,771 ft., Saddle Creek 2,437 ft., dry, TD 2,516 ft.

Texas 1 A. M. McCright, Stephens Scallorns Sur. No. 280, 5 mi. W Noodle, elev. 1,892 ft., completed from Noodle Creek, perf. 2,536-46 ft., pumped 42 bbl. day through 2-in. tubing, gravity 39, TD 3,210 ft.

Stephens County: Hill & Hill 1 A. E. Harvey, Sec. 42, Blk. 4, T&P Sur., 1 mi. SE Caddo, temporarily abandoned, TD 3,391 ft.

The Mudge Oil Co. 1 W. E. Adams, Sec. 2955, TE&L Sur., 12 mi. SW Breckenridge, elev. 1,357 ft., Ellenburger 4,110 ft., top pay 3,870 ft. Marble Falls, IP 312,000 cu. ft. gas through ¼-in. choke on 2-in. tubing, TD 4,247 ft.

OHIO, KENTUCKY

Newburg Sand Produces in Bath Township Pool

COLUMBUS.—Wiser Oil Co. 2 H. J. Steiner, Lot 44, Bath Township, Summit County, found 970,000 cu. ft. of gas in the Newburg sand at 3,065-94 ft. All other wells in the pool are producing from the Oriskany or Clinton sands.

The third Injun sand producer in the new Ludlow Township, Washington County pool, made 100 bbl. of oil with 200,000 cu. ft. of gas. The completion is on Abner Dickson heirs property in Section 15. Sand was at 1,330-56 ft.

Frank Lyons 1 William Porter, Lot 37, Washington Township, Tuscarawas County, was shut in with gas production of 265,000 cu. ft. and 1,220 lb. rock pressure from Oriskany sand. The well has been producing from the Berea sand while drilling deeper. Four offset locations have been staked which will be drilled to the Berea or the Oriskany sand.

OHIO WILDCAT COMPLETIONS

Coshocton County: New Castle Township—Ohio Fuel 1 D. G. Bell, Sec. 19, Clinton 3,247-92 ft., dry, TD 3,312 ft.

Portage County: Aurora Township—Roy Weed 1 Melvin Roberts, Lot 11, Clinton 3,858-3,930 ft., 372,000 cu. ft., rock pressure 1,210 lb., TD 3,945 ft.

WESTERN KENTUCKY

OWENSBORO.—Three oil wells, with a combined initial output of 182 bbl., and two dry holes, comprised Western Kentucky's completion record for the week. No wildcat tests were completed.

EASTERN KENTUCKY

ASHLAND.—Operations in the eastern Kentucky area last week included completion of two gas wells and two oil wells.

The Kentucky-West Virginia Gas Co. completed 5571 A. M. Spears, on Sycamore Creek in Johnson County, at 2,350 ft., with a daily open flow of 103,000 cu. ft. of gas after shot, in shale.

Inland Gas Corp. 262 Bill Cornett on Troublesome Creek in Knott County, was completed at 2,976 ft., with a daily open flow of 133,000 cu. ft. of gas, in shale, with a 24-hour rock pressure of 355 lb.

The Cumberland Petroleum Co. completed 62 L. C. Bailey in Magoffin County, at a total depth of 1,968 ft., with an estimated daily production of 2 bbl.

The Bed Rock Petroleum Co. completed 15 P. E. Caudill in Magoffin County, with an estimated daily production of 2 bbl.

INDIANA

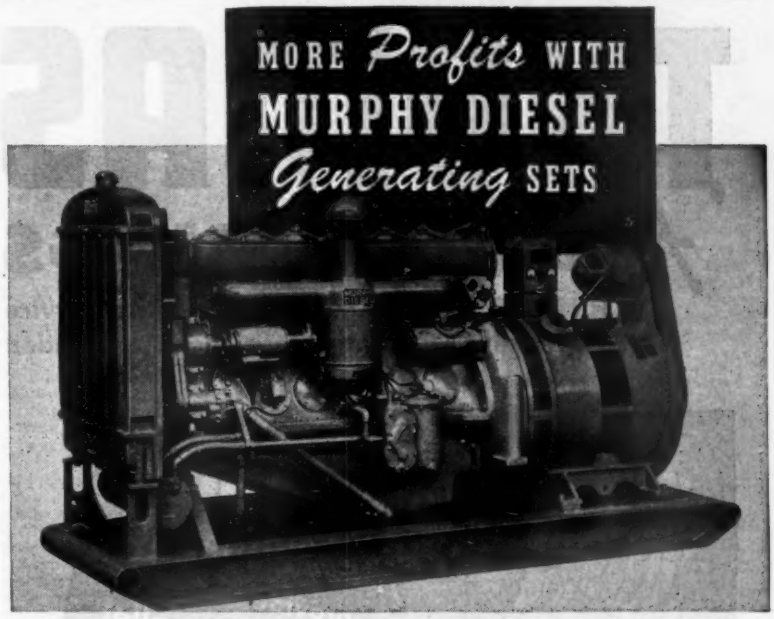
EVANSVILLE.—A 216-bbl. well in the Mount Vernon pool in Posey County, Carter Oil Co. 2 Hart, 500 ft. from the east and 330 ft. from the north line of SW NW SW 1-7s-14w, completed in Waltersburg sand at 1,963-68 ft. and 1,972-77 ft., was the only new oil well reported in Indiana during the week. Two dry holes were abandoned. No wildcat completions were reported.

ROCKY MOUNTAIN

Deep Pay Discovery For Golden Eagle Dome

DENVER.—A discovery in a deeper pay on the Golden Eagle dome, Hot Springs County, Wyoming, was chalked up in the Pioneer Oil Corp. 2 On Time OPC, SW SE 12-45n-97w, which flowed 80 bbl. of 52°-gravity crude per day from the Dakota sand through perforations at 7,165-7,202 ft. in the 7-in. set at 7,379 ft. The top of the Dakota was at 7,165 ft. the location is ½ mile southeast of the same company's discovery in the Muddy sand which on a 12-hour test averaged 3,500,000 cu. ft. of gas and made 250 bbl. of 58°-gravity crude through a choke on the tubing. The Dakota, which lies immediately below the Muddy, was tested for the first time in the second well.

Devon discovery improves.—The Texas Co. 1 Ekholt, NW SW NW 3-33n-1e, a small discovery last month in the Devon area, east of the Kevin-Sunburst field, made approximately 5 bbl. per day from the Madison at 1,651-53 ft. after pumping off the head. Acidized, the well pumped 20 bbl. of oil, no water, first 24 hours and is estimated at 12 to 13 bbl. per day settled production.



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Lost Soldier extension.—Sharpless Corp. 1 Government, NW NE NW 14-26n-90w, Lost Soldier field, Sweetwater County, Wyoming, will extend the Tensleep pay 1¼ miles to the southeast. It is a near completion and in a drill-stem test at 5,998-6,036 ft., open 1 hour, showed 1,260 ft. of oil, 5 per cent drilling mud. It was deepened to 6,093 ft. and is running the 7-in. Producers on lower contours have been drilled on the north flank.

South Elk Basin test.—Continental Oil Co. 1 Goodstein, NE SE SW 20-57n-99w, 3 miles south of nearest producer in Elk Basin and on a separate high, continues to look favorable as it drills toward the Tensleep. It is bottomed at 5,934 ft., topped the Sundance at 5,885 ft., and with packer at 5,835 ft., open 35 minutes, showed a small quantity of gas, no water. So far no water sands have been encountered. Best show in a drill-stem test was in the Dakota at 5,390-5,439 ft., which made estimated 10,000,000 to 12,000,000 cu. ft.

Church Buttes test.—Manning & Brown, Inc., drilling contractor, is moving in rotary tools for the Mountain Fuel Supply Co. 10,000-ft. test on the Church Buttes structure, Uinta County, southwestern Wyoming, for which location is in SW NW 8-16n-112w. It will be one of the most important wildcats of the year. Spudding was delayed by shortage of heavy duty rigs. Drilling will be in the Tertiary.

WYOMING WILDCAT COMPLETIONS

Hot Springs County, Golden Eagle: Pioneer Oil 2 On Time OPC, SW SE 12-45n-97w, TD 7,385 ft., top of Dakota 7,165 ft., flowing 80 bbl. 50°-gravity crude through perf. in the Dakota at 7,165-7,202 ft. Discovery in deeper pay.

Niobrara County, Keeline prospect: Texas 1 Henderson, SE NW SE 18-33n-66w, TD 3,252 ft., dry, base White River 1,255 ft., Sundance formation 1,255-75 ft., Sundance sand 1,275-1,345 ft., red beds 1,345-74 ft., Minnekahta 1,870 ft., Opeche 1,910 ft., Minnelusa 1,995 ft., Madison 2,825 ft., Deadwood 3,215 ft.

MONTANA WILDCAT COMPLETION

Toole County, Kippen prospect: Texas 1 First National Bank, SE SE NW 11-34n-1e, TD 1,749 ft., 7-in. 1,510 ft., Ellis sand 1,726-44 ft., Ellis-Madison 1,744 ft., sulfur water, dry.

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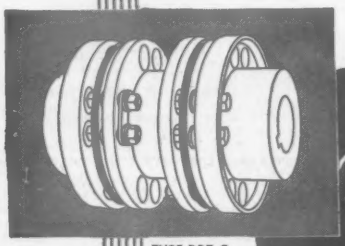

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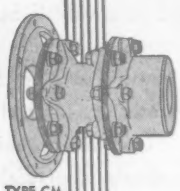

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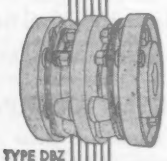

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OKLAHOMA

W. Edmond Engineering Survey Being Made

THE more than 380 producing wells in the West Edmond field were shut in on Tuesday to permit the engineers of the Corporation Commission's conservation department to survey the field for the purpose of ascertaining bottom-hole pressures, gas-oil ratios and other facts that will assist operators in obtaining the best results from their properties.

An even dozen wells were completed in the West Edmond field, Oklahoma's busiest oil area, during the week in review, all of them productive, and were followed by a half dozen others from the close of that report until this writing.

Atlantic Refining Co. 1 Trindle, C SE SE 25-15n-5w, Kingfisher County, showed big gas production in a drill-stem test of Bartlesville sand topped at 6,628 ft. and cored to 6,639 ft. It also developed 400 ft. of oil and gas-cut mud. Drilling was continued.

Southeast Garber.—Cities Service Oil Co. 1 Mariner, NW NE NW 6-22n-3w, the discovery well of the new Southeast Garber field in Garfield County, which flowed 99 bbl. per hour through chokes from Arbuckle lime at 5,246-97 ft., total depth, was completed after being pinched to 12 bbl. per hour. Cities Service will drill the east offset and Ohio Oil Co. and Champlin Refining Co. will drill south, west and north of 1 Mariner. The Con Tex Petroleum Co. and others 1 Wolfe, north of the Barnes pool, Garfield County, NE SW SW 34-24n-3w, which had good showings of oil and gas in Wilcox sand at 4,838-40 ft., was being tested at the close of the week in review.

In the old Garber field Sinclair Prairie Oil Co. spudded 28 Richard Hoy, NE SE NE 25-22n-4w, which will be an Arbuckle lime test. Texas Co.'s deep test south of Covington, 1 School land-F, SW SW SW 31-21n-4w, topped Arbuckle lime at 6,448 ft. and was drilling below 6,480 ft.

Deepest active test.—The deepest active drilling well in Oklahoma California Co. 1 Reeder, C NE NW 1-8n-17w, 10 miles northeast of the Hobart pool, Kiowa County, was last reported drilling at 10,938 ft.

A wildcat in Bryan County, Amerada Petroleum Corp. et al 1 Williams, NE NE SW 27-6s-7e, had the Bromide zone at 3,198-3,222 ft., flowed an estimated 10,000,000 cu. ft. of gas, and was slopping oil when the drill-stem tester was withdrawn. Drilling was continued to 3,257 ft. Seven-inch casing was set at 3,072 ft.

The north edge of the East Pauls Valley pool in Garvin County was defined by a dry hole at 3,507 ft., Ohio Oil Co. 1 Luke, SW SE SW 8-3n-2e.

Pool extended.—The South Moore pool in Cleveland County was extended by Sohio Petroleum Co. and Wood Oil Co. 1 Pohlman, NE NW NW 35-10-3w, which flowed 371 bbl. of oil in 13 hours through open 2-in. tubing, and then 735 bbl. in 24 hours from Bartlesville sand at 7,800-30 ft. Wilcox sand had been found dry at a total depth of 8,965 ft. and the hole was

(Continued on page 151)

WILDCAT COMPLETIONS AND DISCOVERIES

	Week ended Feb. 10, 1945					Cumulative total, 1945				
	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
Ohio	0	0	1	1	2	0	0	1	6	7
Indiana	0	0	0	0	0	0	0	0	0	0
Illinois	0	0	0	5	5	6	0	0	37	43
Kentucky	0	0	0	0	0	1	0	1	6	8
Michigan	1	0	0	6	7	1	0	0	27	28
Kansas	1	0	1	9	11	5	0	3	53	61
Neb., Mo., Iowa	0	0	0	0	0	0	0	0	5	5
Oklahoma	2	0	1	4	7	10	0	2	33	45
Texas:										
North Central	1	0	1	9	11	10	0	2	42	54
West	0	0	0	6	6	3	0	0	29	32
Panhandle	0	0	0	1	1	0	0	0	1	1
Eastern	0	0	0	1	1	3	0	0	6	9
Gulf Coast	0	0	0	3	3	6	0	6	33	45
Southwest	0	0	0	4	4	2	0	1	26	29
Total Texas	1	0	1	24	26	24	0	9	137	170
Louisiana:										
Northern	0	0	0	0	0	0	0	0	9	9
Southern	1	0	0	0	1	3	0	0	5	8
Total Louisiana	1	0	0	0	1	3	0	0	14	17
Arkansas	0	0	0	2	2	0	0	0	8	8
Mississippi	0	0	0	2	2	1	0	0	11	12
Ala., Ga., Florida	0	0	0	0	0	0	0	0	2	2
Montana	0	0	0	1	1	2	0	0	3	5
Wyoming	1	0	0	1	2	5	0	0	4	9
Colorado-Utah	0	0	0	0	0	0	0	0	2	2
New Mexico	0	0	0	1	1	2	0	0	7	9
California	0	0	0	3	3	0	0	1	25	26
Total United States	7	0	4	59	70	60	0	17	380	457
Total previous week	12	0	4	53	69					

EASTERN TEXAS

East Texas' Deepest Hole Dry at 12,010 Ft.

DALLAS.—Humble Oil & Refining Co. 1 Searcy, Titus County wildcat south of Mount Pleasant, and deepest hole yet drilled in the East Texas area, is dry at total depth of 12,010 ft. after showing only water, with no oil or gas, in the Smackover lime topped at 11,790 ft.

Third producer, a northeast offset to the discovery well, is being completed in the Bacon lime Pickton field, Hopkins County, at Humble 1 W. A. Nichols, which recovered 9 ft. of porous, saturated lime in core from 7,892-7,912 ft., then cemented casing at total depth 7,940 ft., to perforate for completion. Hunt Oil Co. staked 1 O. W. Miller, Wm. Nichols Survey, a northwest extension location 3,000 ft. from Hunt 1 Spigner, producer completed last week for 389 bbl. in 24 hours through 3/16-in. choke, gas-oil ratio 1,280 to 1, from perforations at 7,892-7,903 ft. Humble 1 G. W. Miller, north side of the field, is drilling below 5,320 ft. Sun Oil Co. 1 Turner, 2 miles northeast of Pickton field, is dry at total depth 8,189 ft.

Hunt County.—Ohio Oil Co. 1 Popper, projected Smackover lime wildcat 2½ miles northeast of Cash, logged oolitic lime and shale, no shows, from 4,980-96 ft., is drilling ahead.

Smith County.—Phillips Petroleum Co. 1 Englander, wildcat 3½ miles south of the South Tyler field discovery, is reported drilling below 11,000 ft., while Phillips 1 Grelling, near the discovery, is below 9,942 ft., with no details on shows or formulations relased.

Rusk County.—H. C. Owens 1 J. H. Rousseau, new Travis Peak sand gas-distillate discovery, made estimated 3 to 5 million cubic feet of gas daily, open flow, from casing perforations at 7,382-89 ft., with estimated 25 to 30 bbl. straw-colored distillate per million cubic feet of gas. Shut-in pressure is 2,950 lb.

Leon County.—Al G. Hill 1 fee, 2½ miles northeast of Jewett, topped Woodbine at 6,004 ft., is dry at total depth of 6,424 ft., elevation 521 ft.

EASTERN TEXAS WILDCAT COMPLETION

Cherokee County: Crown Central Pet. Corp. 1 Opelia Stockton, Seven Jarboe Sur., 2 mi. SW Mixon, elev. 431, Woodbine 4,304 ft., dry, TD 4,491 ft.

MISSISSIPPI

Two Oil Wells and Two Failures for Week

JACKSON, Miss.—The Cranfield pool in Adams County has been given a new producer by the California Co. 5 Ratcliffe, 67-7n-1w, which flowed 345 bbl. through ⅛-in. choke from the Massive sand at 10,304-36 ft. after perforations. Tubing pressure was 1,850 lb., and the gas-oil ratio was 1,010. The Wilcox was cut at 4,095 ft., and the Massive sand at 10,287 ft.

The Gulf Refining Co. 19 Stanley, 600 ft. south and 1,900 ft. east of the NW cor. 7-9n-8w, in the Eucutta field of Wayne County, is completed for 22 bbl. per day from the Stanley after perforating at 5,138-53 ft.

Two wildcats were completed this week, both of them dry. In Madison County, the Carter Oil Co. 1 Howard, approximately SW NW 31-11n-4e, found no shows in drilling to 5,130 ft. The Eutaw was cut at 4,962 ft., and the Wilburn sand at 4,986 ft. In Marion County, the Gulf Refining 3 Bradshaw, approximately NE SE NW 29-3n-17w, drilled to 9,622 ft. in black shale, and is dry. Marine Tuscaloosa was topped at 9,239 ft.

MISSISSIPPI WILDCAT COMPLETIONS

Madison County: Carter 1 Howard, approx. SW NW 31-11n-4e, dry, TD 5,130 ft., Wilburn sand 4,986 ft.

Marion County: Gulf 3 Bradshaw, NE SE NW 29-3n-17w, dry, TD 9,622 ft. in black shale, Marine Tuscaloosa 9,239 ft.

LA.-ARK.

Holly Ridge Pool Given New Producer

SHREVEPORT.—Carter Oil Co. has given the Holly Ridge pool another good producer with its 2 Mutual Realty Co., SE SW 30-11n-10e. The well is producing from the Massive sand at 8,396-8,406 ft., and had an initial production of 269 bbl.

Four gas wells were completed this week in North Louisiana, two in the Logansport field, one in the Lisbon field, and one in the Monroe field. Arkansas Louisiana Gas Co. 1 Stephens unit, 100 ft. south and west of C 30-12n-15w, Logansport field, had an initial production of 48,000,000 cu. ft. from 4,953-95 ft. The other Logansport well, Southern Production Co. 1 Williams unit, 200 ft. southwest of C 29-12n-15w, produced 15,000,000 cu. ft. from two pay zones, 6,080-6,100 ft. and 6,120-30 ft.

ARKANSAS WILDCAT COMPLETIONS

Ouachita County: G. H. Vaughn 1 Haltom, NE NE SE 28-15s-18w, dry, TD 6,264 ft., Smackover 6,133 ft.

Union County: National Associated 1 Smith et al, NE NE NE 17-16s-17w, dry, TD 6,395 ft., Buckner 6,160 ft.

CALENDAR

April 1945

Midwest Power Conference, eighth annual meeting, Palmer House, Chicago, April 9 and 10.

I.P.A.A., midyear directors meeting, New Orleans, La., April 16-18.

October 1945

Texas Mid-Continent Oil and Gas Association, Rice Hotel, Houston, October 4-6

I.P.A.A., annual membership meeting, convention city to be selected later, October 15, 16 and 17.

LEGAL

U. S. DEPARTMENT OF THE INTERIOR, General Land Office, Washington, D. C. Notice is hereby given that the SE¼SW¼ sec. 5, T. 17 S., R. 32 E., N.M.P.M., New Mexico, 40 acres within the known geologic structure of the Mitchell oil field is offered as a single parcel to the responsible qualified bidder of the highest cash bonus per acre for lease under section 17 of the mineral leasing act, as amended by the act of August 21, 1935 (49 Stat. 674, 30 U.S.C. sec. 226). Sealed bids will be received in the office of the Commissioner of the General Land Office, Interior Building, Washington 25, D. C., up to twelve noon February 27, 1945. Each bidder must submit a certified check or cash for one-fifth of the amount bid payable to the order of the Treasurer of the United States and file the showing of qualifications to receive a lease required by section 7 of Circular 1386. The remainder of the bonus bid and the annual rental at the rate of $1 per acre must be paid, and a $5,000 corporate surety bond must be furnished by the successful bidder prior to the issuance of the lease. The deposits of the other bidders will be returned upon acceptance of the successful bid by the Secretary of the Interior. The envelopes should be plainly marked "Bid for lease, Mitchell oil field, New Mexico. Not to be opened before noon February 27, 1945." No bids received after the hour fixed herein for submitting bids will be considered. The successful bidder will be required to agree not to discriminate against any employee or applicant for employment because of race, creed, color, or national origin and to require an identical provision to be included in all subcontracts. Bidders are warned against violation of section 59, U. S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. Fred W. Johnson, Commissioner.

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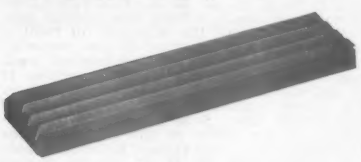

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SEE COMPOSITE CATALOG
PAGES 3101 TO 3120

WEB WILSON
Oil Tools
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HUNTINGTON PARK - CALIF.

Among the Drilling Contractors

Charles Mills, Loydminster, Canada, is finishing Community Services 1, LSD 12, 24-49-28w3, in the Saskatchewan end of the Lloydminster field. The well, perforated at 1,670 ft. for a gas flow, estimated at 4,000,000 cu. ft., with additional gas at 1,685 ft. Contracts have been let for Community 2, LSD 15, 24-49-28w3, and Community 3, LSD 16, 10-49-28w3.

Loffland Brothers Co. is the drilling contractor on the Carter Oil Co. 1 John Turner, a new location 150 ft. south of the C SW NW 26-10-3w, Cleveland County, Oklahoma.

Falcon Seaboard Drilling Co., of Tulsa, has the 7,000-ft. drilling contract on the Herndon Drilling Co. 1 D. E. Mack, a wildcat test in northeastern New Mexico. The test is in Section 25-27n-36e, north of Clayton, N. M., and a few miles west of the Cimarron County, Oklahoma, line. The well had reached a depth of 1,000 ft.

K. de K. Corp., of Vermilion, Canada, is resuming drilling of Edgerton Oils 2, LSD 3, 20-43-4w4, from 2,198 ft. Location is east of the Wainwright field in Alberta.

J. E. Mabee Drilling Co. has been awarded contract to drill a new well for Kern Oil Co. out on the Edison front, San Joaquin Valley, California, where a discovery of probable importance was recently made by another prospector.

Tri-State Drilling Co. has the contract on the Aladdin Petroleum Co. and Alf Landon 1 Hastings, CEL SE NE 31-30-14w, a wildcat location 2 miles east of the Sun City pool production in northwestern Barber County, Kansas.

Earl Wakefield, contractor, was drilling below surface on the Eldorado Refining Co. 1 Patterson, in SE SE NE 23-33-2e, a wildcat in southeastern Sumner County, Kansas.

Rine Drilling Co. will drill the Cities Service Oil Co. 1 Wilkinson, in NW NW NE 6-22n-3w, in the new Southeast Garber field of eastern Garfield County, Oklahoma. This is an east offset to the discovery. Pits and cellar were being excavated. Same contractor will drill the Sinclair-Prairie Oil Co. 28 Richard Hoy, in NE SE NE 25-22n-4w, in the old Garber field in Oklahoma, which will be a deep test to the Arbuckle.

Lesh Drilling Co. will drill the Gulf Refining Co. 1-A Henry A. & Carolyn E. Reineke, in SE SW 5-6s-12w, Posey County, Indiana.

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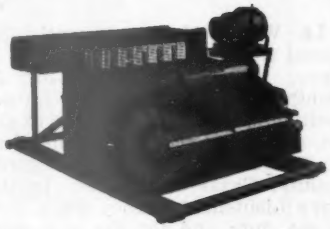
A. P. McQUISTON, BAKERSFIELD, CALIFORNIA
REED ROLLER BIT CO., HOUSTON, TEXAS

McNEELY VIBRATING MUD SCREEN



Handles the output from 20" mud pumps after surface hole is drilled. Average capacity 650 gallons per minute. Completely unitized. Screening surface—16 square feet. Domestic shipping weight less drive—1600 pounds. Headroom—27 inches. See Composite Catalog or write for details.

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McNEELY MATERIALS CO.
2935 JENSEN DRIVE, HOUSTON, TEXAS

MARKET QUOTATIONS

Prices as of February 13, 1945

(This service is abbreviated because most refinery products are selling at the Government's price ceilings. Quotations on other products than those shown here furnished on request. Quotations are f.o.b. plant in tank cars and in cents per gallon.)

REFINERY GASOLINE

Octane (A.S.T.M.)	76†	70-74
Mid-Continent*	6.75	5.875
Gulf Coast	6.75	5.625
Northeast Coast	...	9.075
California	...	6.50-7.00

*Basic Oklahoma Group 3. †1939 C.F.R. (research method).

NATURAL GASOLINE

Grades:	26-70	18-55
Oklahoma (Group 3)	4.750	5.700
North Texas (Dist. 1 Del.)	4.500	5.400
North Texas (f.o.b. plant)	4.375	5.250
North Louisiana (Dist. 1 Del.)	5.160	6.060
North Louisiana (f.o.b. plant)	4.375	5.250
California	4.875	5.500

CRUDE-OIL PRICES

Representative posted schedules per bbl.	
East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Illinois basin	1.37
Pecos County, Texas	.95
Bradford, Pennsylvania	3.00
Van, Van Zandt County, Texas	1.08

Note: Exclusive of subsidy.

GRAVITY SCHEDULES

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity.	Signal Hill, Calif.	Okla-homa Kansas	Gulf Coast Texas	West Texas
18-18.9	$0.80	....	....	....
19-19.9	.84	....	$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9	....	1.07	1.30	.94
32-32.9	....	1.09	1.32	.96
33-33.9	....	1.11	1.34	.98
34-34.9	....	1.13	1.36	1.00
35-35.9	....	1.15	1.38	1.02
36-36.9	....	1.17	1.40	1.04
37-37.9	....	1.19	1.42	1.06
38-38.9	....	1.21	1.44	1.08
39-39.9	....	1.23	1.46	1.10
40 and above	....	1.25	1.48	1.12

*Includes Lea County, New Mexico.

A.P.I. REFINERY REPORT

Week ended February 3, 1945
(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks *Gasoline	Distillate	Residual
East Coast	728	12,748	6,194	5,151
Appalachian	161	4,378	587	493
Ill., Ind., Ky.	761	21,221	4,783	2,610
Okla., Kan., Mo.	369	9,233	1,913	1,238
Inland Texas	232	2,863	358	674
Tex. Gulf Coast	1,139	15,277	6,388	8,566
La. Gulf Coast	229	4,410	1,538	1,308
North La., Ark.	82	2,801	784	258
Rocky Mt.	116	1,933	355	803
California	845	16,173	9,470	29,550
Total 2- 3-45	4,662	91,034	32,370	50,451
Total 1-27-45	4,756	89,223	33,651	51,119
Total 2- 5-44	4,358	81,604	36,333	52,956

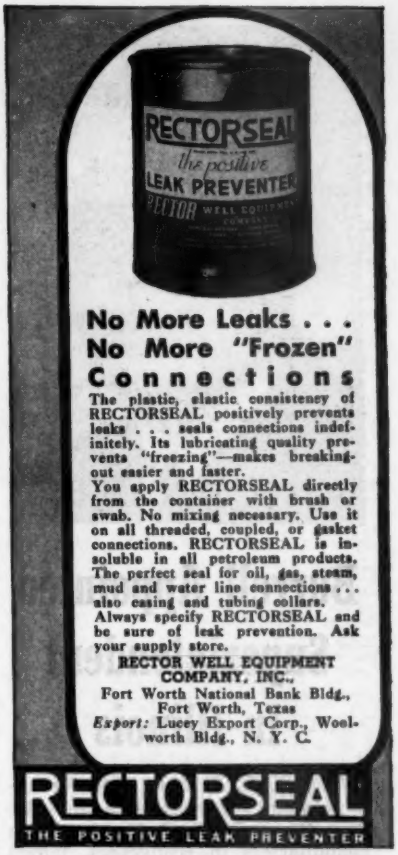
*Military, 43,374; civilian, 47,660.

CRUDE-OIL STOCKS

(Bureau of Mines Estimate)

Week ended—	Bbl. of crude*
February 3, 1945	221,674,000
January 27, 1945	221,310,000
February 5, 1944	237,745,000

*Excludes unrefinable California stocks.



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PERSONALS

Burrell Appointed Superintendent In Illinois

IVAN G. BURRELL, recently appointed superintendent of The Ohio Oil Co.'s Illinois division, with headquarters in Bridgeport, joined that company in 1931, shortly after his graduation from Colorado School of Mines with a degree in engineering. He was employed in the Casper, Wyo., division first. Following a year there he was transferred to the title and tax department in Findlay, Ohio, which incidentally is his native city.

Looking for practical oil-field experience, Burrell was sent to East Texas in 1932 to work as a roustabout. Four years later he was named assistant district engineer in the Rodessa field, and the next year he was promoted to foreman. In 1938 he was made head drilling and production man in Kentucky, and he held that post until 1941, when he was appointed Illinois division engineer. Advancement to superintendent of the division came with the retirement of John F. Reglin, his predecessor.

W. Carroll Kelly, formerly vice president and general manager for Snowden & McSweeney Co., has been made manager of Allied Oil Corp's production department, with headquarters in Chicago.

Richard H. Carr, formerly chief production engineer for Pure Oil Co., has been promoted to chief research engineer in the producing division. He has been with the company since 1919. Carr's place as chief production engineer has been taken by **Kenneth A. Covell,** who was production engineer in the Texas division, with offices in Fort Worth. Chicago will be the headquarters of both men.

S. F. Bowlby of Shell Oil Co., Inc., has been promoted from division manager, San Joaquin division, to chief petroleum exploitation engineer, with Los Angeles as his headquarters. **R. C. McCurdy** succeeds him as division manager of the San Joaquin division and will have offices in Bakersfield.

Henry Emmett Gross, chief of the reservoir engineering section of District 2, Petroleum Administration for War, Chicago, since Pearl Harbor, has joined Kingwood Oil Co., Effingham, Ill., and will handle its petroleum engineering work. Gross, who received his B.S. degree from Missouri School of Mines, was associate professor of petroleum engineering at Texas A. & M. College 3½ years, assistant professor of petroleum engineering at University of Oklahoma 2 years, and was research graduate assistant in mining engineering at University of Illinois, where he obtained his M.S. degree.

Capt. Walter G. Sterling, after an absence of more than 2 years, has resumed his duties as president of Sterling Oil & Refining Corp., Houston. Commissioned a lieutenant in June 1942, he was promoted to captain a few months later.

George O. Suman, superintendent of production and development for Tide Water Associated Oil Co.'s San Joaquin Valley district, Bakersfield, Calif., has been appointed chairman of the Pacific Coast district, American Petroleum Institute, Division of Production. Suman succeeds W. L. Jarvis of The Texas Co., who died recently.

Edward G. Kadane, Wichita Falls operator, was elected president of North Texas Oil and Gas Association at a meeting of the directors last week, in Wichita Falls. **J. P. Coleman,** of McCarty & Coleman, was chosen vice president, and **Fred Sehmann** was reelected executive vice president. The directors voted not to hold the annual meeting this year.

Northrop Clarey, assistant to the president of Standard Oil Co. (New Jersey) for the past 9 years, has resigned that post, but will continue with the company on special duties. Clarey, with Jersey Standard more than a quarter of a century, was formerly associated with the National City Co. and The "Wall Street Journal." At one time he was financial news editor of "The New York Times."

Louis Roark, for the past 5 years chief geologist for Margay Oil Corp., has joined Sunray Oil Corp., Tulsa, as assistant to **H. S. McCintock,** vice president in charge of the land department. Roark, who graduated in geology at University of Oklahoma, took his M.A. degree in geology at University of Indiana. For 2 years he was professor of geology at University of Mississippi. Entering the oil business for himself, he opened the Bemis pool, Kansas, in 1935. He served as geologist for the old Gypsy Oil Co., Gulf subsidiary, and the old Roxana Petroleum Corp., Shell subsidiary.

Lt. W. L. Massey, recently released from active duty in the U.S. Navy, where he served for 27 months, has returned to his former position with American Liberty Oil Co. as cycling plant superintendent in the Blessing field, Matagorda County, Texas Gulf Coast. In the Navy Lieutenant Massey did a turn at sea duty and for the past year was in the fuel division of the naval laboratory, Norfolk, Va.

R. L. Minckler, Glendale, Calif., former head of the division of supply for Petroleum Administration for War, has been elected a vice president of General Petroleum Corp. Starting with the company in 1924, Minckler rose until, at the time he was loaned to the Government, he

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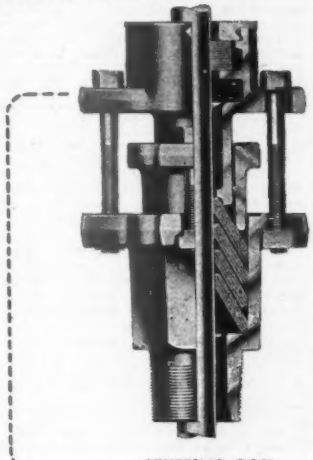
When the going is toughest, Operators turn to Hercules . . . it has been tested and accepted in every oil producing field as Standard. Hercules "Cone Packing" has successfully withstood over 2000 pounds pressure . . . has cut packing costs 75% and more in many instances . . . eliminates wabblers . . . is automatically lubricated . . . won't burn out if well pumps off . . . protects polish rod against excessive wear . . . is easy to install and is moderate in price. Next time . . . "Ask for the Cone Packed Box."



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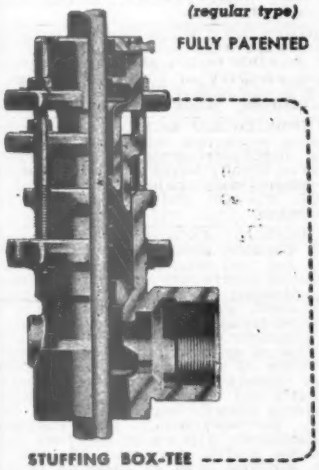

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was assistant to the president, a director, and chairman of the supply committee. For several years Minckler has worked with government agencies as a representative of the petroleum industry.

H. N. Hickey, of The California Co., has been transferred from the New Orleans office to Denver as exploration superintendent for the western division, including the Rocky Mountain states, Kansas, Oklahoma and Texas. **P. R. Calkins,** division landman, also was transferred to the western division. **R. D. White,** district geologist, formerly of the New Orleans office, is now stationed in Denver. **R. D. Copley** continues as production superintendent for the western division.

Maj. Lawrence A. Braden, who was awarded the Bronze Star Medal for meritorious service in Normandy, has returned to his former post as petroleum engineer for Tide Water Associated Oil Co. at Ventura, Calif., having been released from active military duty owing to injuries. He entered the armed forces as a lieutenant shortly after Pearl Harbor. He was injured when he landed by parachute on the roof of a two-story house in a French village held by the enemy. Armed with a pistol only, he fought his way out and rejoined his outfit.

Oklahoma Fields

(Continued from page 146)

plugged back to 8,361 ft. This pool was opened in the Wilcox sand.

OKLAHOMA WILDCAT COMPLETIONS

Garvin County: Ohio 1 Lewis-Wacker unit, SW SE NW 18-9n-2e, flowed 266 bbl. of 32.5°-gravity oil from Bromide sand at 3,013-45 ft., for discovery of new pay in the East Pauls Valley pool. Well made dual completion and flowed 1,080 bbl. of 33.5°-gravity oil from Burns sand (Penn.) at 2,946-72 ft., TD 3,049 ft.

Greer County: E. M. Thomasson 1 Craig, NE SE SE 3-6n-21w, pumped 10 bbl. of 36°-gravity oil from pay zone at 607-32 ft., TD 635 ft., granite wash 607 ft.

Hughes County: Texas 1 Pearson, S½ NE 16-5n-11e, flowed 2,250,000 cu. ft. gas from pay zone at 5,410-76 ft., TD 5,476 ft., Wapanucka 5,038 ft., Cromwell 5,400 ft.

Kay County: Max Cohen 1 Fassnacht, SW NE SW 24-29n-2w, dry, TD 4,118 ft., Simpson 4,085 ft.

Lincoln County: Morgan Oil et al 1 Garrett, NW NW NW 34-16n-4e, dry, TD 4,802 ft., Verdigris 3,815 ft.

Okmulgee County: Conoquenessing 1 Baker-Morton, SW NW NW 1-12n-13e, dry, TD 2,008 ft., Pitkin 1,975 ft.

Pontotoc County: Kingery Drilling 1 Hisaw, NW NE NW 15-2n-7e, dry, TD 2,004 ft., Atoka shale 1,680 ft.

Classified Advertising

LEASES AND DRILLING BLOCKS

NEW MEXICO
State Oil and Gas Leases
Located in the Great San Juan Basin. Oil pools now producing highest gravity crude known. HELIUM discovery. DEEP TEST UNDER WAY. Buy where the majors buy. Write for information. Harry S. Wright, Wright Bldg., Farmington, New Mexico.

SO. GEORGIA shallow sand leases for sale, in blocks of 5-10-15-20-25 thousand acres. Write Owners—Box 364—Waycross, Ga.

ACREAGE given for test wells, three Indiana fields, good structures. Jesse Allen, 1819 Garfield, Terre Haute, Indiana.

FOR SALE: Oil and gas leases on structure and in shallow territory. Will furnish one or more leases for drilling contracts. W. P. Harley, Bowling Green, Kentucky.

GOOD Colo. Structure, 3 miles from producing field. 1,000 acres for test well. Requires 4,000 ft. rotary drilling. Write H. C. Petersen, Rt. 5, Omaha, Nebraska.

PRACTICAL production man wants to buy small shallow production. Prefer property that has room for some additional drilling. Will help finance drilling shallow well. Send all details, including plat, in reply. Box A-418, The Oil and Gas Journal, Tulsa, Okla.

FLORIDA-GEORGIA, leases and royalties, offered in small or sizable blocks. Buy among selected locations of the majors. Write or wire Owners—Box 3747—Orlando, Florida.

FOR LEASE: 880 acres in southern Liberty County, Texas. Address: Mrs. John T. Sweetman, Palestine, Texas.

HAVE Eastern capital for small or large producing oil leases. Also producing royalty in any oil producing states. Give full description. Wire or write, H. D. Evans, 319 S. E. 3rd. Street, Evansville, Indiana.

WANT partner with private capital to develop 2500 acre solid block in proven Texas gas distillate area. Clear titles. Box A-423, The Oil and Gas Journal, Tulsa, Oklahoma.

WILL sell one-half interest in Texas lease with 8 producing wells for $100,000.00 and contract to drill 10 wells to deeper sand in proven area to increase value of property. Box A-424, The Oil and Gas Journal, Tulsa, Okla.

WANTED: Producing oil properties. Large or small. Write, phone, or wire C. A. Parker, Center, Texas.

WANTED TO BUY: Good oil producing properties large or small. Submit data to Box 826, Massapequa, Long Island, New York.

WATCH SHELBY COUNTY, TEXAS

Gas, Oil and Distillate production. Approximately 50 wells on production. 3 new tests being drilled. County being blocked for drilling. 5 producing sands have been encountered. For leases write or wire C. A. Parker, Box 451, Center, Texas. Phone 245. Reference, Farmers State Bank, Center, Texas.

LEASES ROYALTIES

PRODUCING OR NONPRODUCING
Texas, New Mexico, Oklahoma, Louisiana and Illinois.
Inquiries Invited

B. D. BUCKLEY
60 Broadview Drive, Clayton (5), St. Louis, Missouri

HELP WANTED

OLD established Kentucky oil well supply house wants experienced man who knows second-hand business. Give experience, references and salary expected. Box A-417, The Oil and Gas Journal, Tulsa, Oklahoma.

ENGINEERS WANTED: Graduate Ch.E., M.E., or E.E., 20 to 29 years of age, having refinery or laboratory experience. Essential industry with post-war continuance. State education, experience, salary expected, and date of availability. P. O. Box 2546, Houston 1, Texas.

Classified Advertising

HELP WANTED

ENGINEERS: Preferably with chemical background. For technical sales work on chemicals dealing with aviation gasoline and oil refinery work. Experience preferred—plant production, laboratory work in the petroleum, lubricant, or similar industries. Age between 25-40 years. Dependable, good personality. Box A-391, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED by consulting organization: Petroleum engineers with Hayward mud logging experience or its equivalent. Immediate openings in Venezuela, excellent opportunity for advancement to managerial positions throughout the world. Box A-390, The Oil and Gas Journal, Tulsa, Okla.

WANTED: MECHANICAL ENGINEER who knows something about drafting. John Zink Company, 4401 South Peoria, Tulsa, Oklahoma.

DRAFTSMEN

For Process Piping on Oil Refineries

Applications solicited from men not now employed in essential work or those completing essential work who have Statements of Availability

ARTHUR G. McKEE & CO.
2300 Chester Avenue
Cleveland, Ohio

PUMP APPLICATION ENGINEER
Ex-Service Man, sales engineering or engineering background preferred. Post-war future. State age, experience, salary expected. Openings Tulsa and Houston. Box A-411, The Oil and Gas Journal, Tulsa, Oklahoma.

HELP WANTED
Construction superintendent with general field experience in supervising and organizing large petroleum refinery or equivalent project. Write references, salary. Foster Wheeler Corporation, Construction Department, Carteret, New Jersey.

FOUR men experienced in use and maintenance of Flow-meters, Temperature Controls, or Potentiometers. War essential industry. Employment under rules of WMC. Carries highest priority. Central southeast location. Box A-414, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST or GEOPHYSICIST with several years experience in field gravity surveys; for research computation, interpretive analysis and geological correlation of gravity data. Major oil company engaged in expanding gravity exploration program. Give full information education, experience, availability status, salary expected, etc. Box A-420, The Oil and Gas Journal, Tulsa, Oklahoma.

MEN FOR FOREIGN EMPLOYMENT
Limited number desirable positions open in Saudi Arabia:

Petroleum, electrical and mechanical engineers; radio operators and technicians; Diesel and tractor mechanics; air-conditioning and refrigeration mechanics; stabilizer operators; utility operators; surveyors; accountants; stenographers; typists. Employment offers splendid opportunities for post-war security and advancement. Liberal benefit plans; vacations in United States; free hospital and medical care. If genuinely interested in foreign career, send full information on experience, transcript of college record (professional applicants only), references, draft and availability status to our Relations Department.

ARABIAN AMERICAN OIL COMPANY
200 Bush Street
San Francisco 4, California

HELP WANTED

CHEMICAL ENGINEER WANTED: Chemist or Chemical Engineer with Bachelor's Degree wanted to supervise essential natural gas processing plant laboratory. Southwest location. Should have several years experience refinery or larger natural gasoline plants. Submit complete details education, experience, personal data, salaries received and expected, recent photo. Employment subject to W.M.C. regulations. Box A-381, The Oil and Gas Journal, Tulsa 1, Oklahoma.

WANTED: Experienced first-class electrician for permanent work in inland Texas refinery. Base pay $1.12 per hour, work 48 hours week, time and one-half for overtime. Box A-413, The Oil and Gas Journal, Tulsa, Oklahoma.

OIL ACCOUNTANT to act as office manager and treasurer for independent company in Rocky Mountain area. Knowledge of production, drilling, refining and marketing accounting required. Give full details including salary expected and when available. Box A-406, The Oil and Gas Journal, Tulsa. Oklahoma.

ONE OF the foremost producers of Industrial Wiping Cloths, both reclaimed and new materials, also mill ends, remnants, etc., is interested in assigning territory now to be ready for post-war operation. We are interested in the better type sales representative organizations now calling on the Industrial Trade. Advise particulars on manpower, territory and lines now carried. All replies will be treated confidentially. Box A-428, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED: Assistant to general superintendent of production for well established independent oil company. Must have exceptional ability and thorough experience handling production, completion new wells including shooting, acidizing, workover jobs in various areas Mid-Continent and Gulf Coast fields. State age, training, experience and refereences. Permanent position, good salary. P. O. Box 670, Fort Worth, Texas.

DRILLER with broad water well experience to handle rotary tools in East. Give full particulars and monthly salary desired. American Drilling Company, Fair Haven, N. J.

WANTED: Refinery Mechanical Engineer capable of sizing equipment, supervising new construction and maintenance. Permanent job for right man by Southwest Refinery. Box A-434, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED: EXPERIENCED REFINERY SUPERINTENDENT for Gulf Coast refinery. Preferably chemical engineering background with Dubbs or Kellogg cracking plant experience. In application state age, experience, education, training, salary expected, when available. Statement of availability required. All replies confidential. Box A-426, The Oil and Gas Journal, Tulsa, Oklahoma.

HELP WANTED: Engineer experience in selection automatic controls petroleum refining units and in field installation of same. Foster Wheeler Corporation, Petroleum Refiner Division, 165 Broadway, New York.

MECHANICAL ENGINEER, leading manufacturer of drilling and production tools, located in Southern California, has opening for man, 25-45, pref. M.E. degree, should have had some experience in design and/or oil field operation. We sincerely believe this to be a worthwhile opportunity for the right man. Salary will be in line with past record and ability. Write fully giving outline of personal data and experience for past ten years. Enclose small photo if possible. Box A-393, The Oil and Gas Journal, Tulsa, Oklahoma.

SITUATIONS WANTED

GEOLOGIST with southwestern field and subsurface experience, doctorate; desires responsible position in domestic or foreign exploration. Box A-433, The Oil and Gas Journal, Tulsa, Oklahoma.

PETROLEUM ENGINEER: 19 years general experience in production. Past five years as engineer. Age 40, available. Box A-402, The Oil and Gas Journal, Tulsa, Oklahoma.

SITUATIONS WANTED

INSTRUMENT Engineer, age 34, 14 years experience. Majority of this time spent in oil refinery construction and maintenance. 1½ years foreign construction experience. Can handle instrumentation from any angle. Electrical or pneumatic controls. Prefer foreign construction work. Available about March 1. Box A-401, The Oil and Gas Journal, Tulsa, Oklahoma.

REFINERY executive of 17 years experience in processing petroleum products, desires employment in managerial capacity with small refinery in Southwest area. Box A-404, The Oil and Gas Journal, Tulsa, Oklahoma.

MANUFACTURERS and Distributors of oilfield machinery, specialties, equipment and supplies. Do you want representation in Texas Gulf Coast with Houston as headquarters? Can furnish any reference as to my knowledge, ability and integrity and successful sales record. Well acquainted with the supply house personnel and specialty men, purchasing agents, buyers, engineers, superintendents and others with the oil companies, drilling, workover and other contractors and independent operators in this section. Wish to secure representation on a drawing account commission basis. Address Box A-412, The Oil and Gas Journal, Tulsa, Oklahoma.

FIELD Superintendent. Draft exempt. Twenty-three years experience—last ten as field superintendent and assistant manager. Thoroughly familiar with drilling and production work. Now employed. Desires connection with aggressive Mid-Continent operator. Engineering graduate. Sober. Industrious. Box A-410, The Oil and Gas Journal, Tulsa, Oklahoma.

GRADUATE GEOLOGIST: Age 27, has B.A. degree in geology, is single, in excellent health, and draft deferred at present, desires position as junior geologist with major or progressive independent company. Would prefer surface interpretative work in the Appalachian geosynclinal area. At present employed in seismic prospecting. Available thirty days after acceptance. Box A-429, The Oil and Gas Journal, Tulsa, Oklahoma.

TWENTY years, experience in operations, topping, cracking, gas compression and recovery, light ends fractionation, light and heavy treating. Have statement of availability. Box A-365, The Oil and Gas Journal, Tulsa, Oklahoma.

COMPETENT, Reliable man. Twenty-five years experience as Drilling Superintendent on cable tools wishes position with reliable company or firm. Details and references on inquiry. Box A-436, The Oil and Gas Journal, Tulsa, Oklahoma.

EXPERIENCED BUYER, A-1 references, desires connection with major, independent, distributor, group or inrividual, as lease or royalty buyer in Florida and Georgia where many majors have bought. Box A-435, The Oil and Gas Journal, Tulsa, Oklahoma.

CHEMICAL ENGINEER—B.S. 1940—M.S. 1942. Capable, ambitious young man with urge for real accomplishment desires responsible supervisory or executive position in petroleum or allied industry. Must be permanent, war essential position in progressive organization with opportunity for advancement commensurate with ability. Capable of assuming full responsibility for operation of small refinery or division of large refinery. Would welcome opportunity to build and operate pilot plant. Superior scholastic record. Sound training in chemistry, thermodynamics and engineering fundamentals. 3 years as half-time undergraduate analytical chemist. 1½ years design and operation of catalytic dehydrogenation pilot plant. One year as laboratory supervisor and research chemist. 2½ years design and operation of large scale crude topping and vacuum lube unit. Familiar with plant layout, equipment design, maintenance, operation, pilot plant and full scale plant investigations. Age 31, married, 3 children, draft 2B. Mid-Continent or Gulf Coast preferred. Present salary $4000. Salary desired, $6000. Box A-421, The Oil and Gas Journal, Tulsa, Oklahoma.

WOULD like to make connection with some progressive company as superintendent. Have 35 years' experience in all phases of drilling and production and petroleum engineering. Have been contractor and producer past 20 years. Would take interest in company if desirable. Box A-422, The Oil and Gas Journal, Tulsa, Oklahoma.

PRODUCTION Executive of large independent company who is geologist and petroleum engineer experienced in Mid-Continent and Gulf Coast wants to change companies where he can get interest or right to buy royalties. Box A-427, The Oil and Gas Journal, Tulsa, Okla.